

COMMAND AND CONTROL OF ORGANIC AVIATION
IN U.S. ARMY DIVISIONS
1942 TO 1961

An abstract for a thesis presented to the Faculty of
the U. S. Army Command and General Staff College in
partial fulfillment of the requirements of the
degree

MASTER OF MILITARY ART AND SCIENCE

by
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Fort Leavenworth, Kansas
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ABSTRACT

The objective of this thesis is to provide the reader with a record of the most important developments in the evolution of doctrine for the command and control of organic divisional aviation between 1942 and 1961, and to provide a source of reference data for more detailed study of the subject. Throughout this paper, the words "command" and "control" are used separately and should not be considered together as a term referring to a communication system for directing and controlling air activities.

In conducting research for this thesis, events were reviewed in chronological order as far as possible. The total period involved was divided into chapter-sized parts which contained the significant developments of specific eras. Each major change in organization of the division and important shift in the tactical situation during combat were examined to determine their effects on command and control techniques and procedures. The main source of reference material was the archives of the U. S. Army Command and General Staff College.

The material in this thesis is presented in chronological order. Since doctrine for employment of organic aviation was very similar in each type of division, emphasis is placed on infantry division employment doctrine. Major differences between the infantry division and other types of divisions are discussed briefly where they

are of interest to the study.

When the Second World War began, doctrine for employment of aviation in support of the army called for the pooling of all aviation resources at higher levels under a theater or similar commander. Army divisions at that time did not contain aviation units, but in 1942 the War Department authorized small air observation sections in the division artillery of all divisions.

Initially both aircraft and pilots were in short supply, but, by 1943, aircraft procurement had been increased and the Army Air Forces (AAF) and Army Ground Forces (AGF) had worked out a system for training pilots for artillery units.

The first experience with an artillery air observation section in the invasion of North Africa was quite disappointing because there had been no definite plan for the employment of the section. As the war progressed, techniques and procedures were worked out by air section leaders and their battery commanders. The battery commander provided personnel, administrative, and some logistical support for the section, but was not technically qualified to evaluate the operation of the section or the qualifications of its personnel. The chain of command went from the division commander to division artillery commander to artillery battalion commander to headquarters and headquarters battery commander, then to the air observation section leader. Most division artillery commanders realized the need for increased supervision of subordinate air observation sections, and control over the operation of these sections by the senior pilot in the division artillery headquarters battery was tightened. This was the first use of the centralized control concept. The Sicilian camp-

aign saw this concept come into full bloom, and it was used extensively in all theaters of operation during the remainder of the war. In December 1943, an artillery air officer position was added to the division artillery staff by the War Department.

Sicily and Italy were the real proving grounds for the air observation section. Doctrine developed there was perfected and refined in other theaters during the remaining months of the war.

When forces were massed in England and plans prepared for the assault across the channel, organic divisional aviation was integrated far more effectively than it had been in the invasion of North Africa and the results were excellent. From 1944 until the end of the war, centralized control was the normal method of operation in the European Theater of Operation.

In the Pacific, task-force-type organization for combat, available shipping, and the distance to the objective usually determined the air OP organization for assault landing. Unlike operations in Europe, divisions frequently shifted from one method of control to another because of the nature of island hopping warfare.

After almost three years of experience with air observation sections in combat, relatively few changes had been made in the basic concepts. The most significant development during this period was that the assignment of air sections remained decentralized, while control was frequently centralized by division artillery commanders.

In the years between World War II and Korea, two major changes occurred in the organization of aviation in Army divisions. The first of these changes in 1945 greatly increased the number of air sections and provided an aviation staff section at divisional level. The second

change, occurring in 1948, placed all of the division's aircraft, except those in division artillery, into the division headquarters company. With the addition of liaison aircraft to infantry, armor, and cavalry units, officers from these branches were trained as liaison pilots along with artillery officers.

Evolution of doctrine for the command and control of organic aviation progressed very slowly in the late 1940's. In spite of significant changes in organization, the basic concepts worked out by the artillery for air observation sections were generally carried over and applied to the new air sections. In the supervision and control of air section activity, only three significant developments occurred during this period. They were: the publication of specific guidance in FM 20-100, the gradual realization that increasing air traffic over the division zone would have to be controlled more closely, and the partial abandonment of the decentralized control concept in assignment of aircraft within the division.

In their eagerness to get the job done during the first few hectic weeks of combat in Korea, air sections frequently lost their identity as all aviation resources were employed under the control of the division aviation officer. In the Pusan perimeter, aviation missions increased and each division on line in Korea developed its own control techniques. Personnel and equipment remained assigned to the division headquarters company, the four artillery battalions and division artillery headquarters, but, in most cases, assignment of air sections was not a major consideration in deciding on a method of control.

The first two divisions to use a form of centralized control

in Korea were the 25th Infantry and the 1st Cavalry. Major advantages to centralized control were: improved overall control, efficiency of operation, maximum utilization of resources, ease of maintenance and supply, equitable distribution of missions between pilots, improved local security, and minimum airfield requirements. The disadvantages to such a system were: reduced responsiveness to artillery commanders, loss of direct contact between pilots and artillery firing units, and a separation of artillery air sections from their command headquarters.

In Korea, no serious problems developed in the control of Army Air Traffic over the division zone. As Army aviation was used to perform an increasing volume and variety of missions, a high degree of staff coordination was required to obtain maximum benefit from the employment of the division's aircraft.

Development of a tactical stalemate starting in November 1951 greatly relieved the aviation situation within divisions. On 15 May 1952, new TOEs were published which gave divisions many more aircraft. Assignment of these aircraft was decentralized at a time when most divisions were pooling their aircraft because of the tactical situation and improvements in aviation equipment.

Provisional aviation companies were organized in Korea in 1953 and the control of division aviation operations was streamlined. The division aviation officer, who was also the company commander, participated in the planning of division operations and was directly responsible for the effective employment of the aviation company. The company provided the solution for a number of perplexing problems, but, regardless of how efficiently it operated, aviation support was not as

responsive to the needs of ground commanders as it had been and a measure of the personal contact and understanding between the pilot and the unit he was supporting was lost. To many commanders these were key issues.

When the Korean War ended, Army Aviation was in a quandary. New organizations had been developed but not adequately tested, advances in aircraft design had not been fully exploited, the personnel situation had become more complicated, and there was very little agreement on how divisions could best command and control their aircraft. Unfortunately, command and control techniques and doctrine Army-wide had not kept pace with technological advances and experiences gained in Korea.

Starting in 1954, the Army organized, trained, and tested certain selected divisions under the "Atomic Test Field Army" (ATFA) concept. A combat aviation company was assigned to the division headquarters battalion of each test division. The normal chain of command ran from the division commander through the division headquarters battalion commander to the aviation company commander. The headquarters battalion commander exercised command (less operational control) over the aviation company. Operational control over the company was delegated to the division aviation officer.

Support was provided to elements of the division by either of two methods: (1) a flight group was attached to or placed in support of a specific unit, (2) all aircraft not placed into one of the flight groups were utilized in general support of the entire division.

Training text 1-100-1 published in 1954 described the first Army air traffic control system concept. In June of 1955, the aviation

company became a separate company of the division headquarters troops, but, after testing was concluded, the Army did not adopt the ATFA concept.

In December of 1956, the Army started to reorganize its divisions with major emphasis on the problems of ground atomic war with due consideration to the evaluated experience of history and field tests. The organization of aviation was slightly different in each type of pentomic division; basic command and control doctrine was very similiar.

The normal chain of command ran from the division commander through a division trains commander to the aviation company commander. When operational plans were prepared, the aviation officer was responsible for recommending the task organization of the aviation company. Elements of the division not provided with a combat support flight or section obtained support from the aviation company's rear echelon. Because of the magnitude of the division's organic aviation operation, effective control was quite difficult to maintain.

Air traffic control became increasingly complex during the pentomic evaluation period, and, through testing, the Army air traffic control system concept was found to be only adequate to control air traffic for a limited time.

Reorganization and evaluation of ROCID divisions were concluded in early 1959. The aviation company had proved to be a viable unit, and doctrine for command and control of the division's organic aviation was generally considered sound.

New TOE's were published in 1959 and all divisions reorganized accordingly. The most important changes in organization of the infantry division's aviation under new TOE's were the assignment of the aviation

company as a separate company directly under division headquarters and the addition of a 3d echelon aircraft maintenance capability to the division. The maintenance detachment normally lived with the aviation company but operated under the command and technical control of the transportation battalion commander. In the new divisions, with greater mission capabilities, staff coordination became even more important and effective control more essential. The most serious areas of difficulty encountered were: size and complexity of the aviation company, relationship between the division aviation officer and aviation company commander, doctrine for the control of air traffic, control of the 3d echelon aircraft maintenance detachment, and a complex system of providing support to habitual users of aviation resources.

By 1961, the Army school system was providing well-trained personnel for division aviation companies, and Department of the Army policies pertaining to ground assignments for aviators were effective in orienting the aviation program closely to the needs of ground tactical commanders.

Looking back over the changes which occurred, it is apparent that the evolution of doctrine was accelerated during World War II and the Korean conflict and retarded during other periods. Firm doctrine on the control of Army air traffic over the division zone was never published. By far the greatest controversy involving organic division aviation had to do with the manner in which it was controlled. The pros and cons of centralized versus decentralized control are discussed in considerable detail in this paper.

By 1961 the Army had many more definite ideas about its divisional aviation than it had in 1942, and the experience gained over the

years will be useful in developing doctrine for the employment of even greater organic aviation capabilities at division level in the future.

The writer hopes that information contained in this paper will in some way be of assistance in developing future doctrine for command and control of organic division aviation.

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PREFACE

During recent years, Army Aviation has become an increasingly important tool for the ground tactical commander in the conduct of combat operations. Dramatic advances in technology and sizeable increases in the amount of aircraft in the Army inventory, along with the changing nature of ground warfare in the nuclear age, have required continuous change in doctrine for the command and control of this valuable asset. Any attempt to organize new Army aviation units or develop doctrine for employing these units should involve an appraisal of past organizations and doctrine, for much valuable experience has been gained in these fields.

Although there is a considerable amount of historical data available concerning aircraft capabilities and roles and missions of Army Aviation, there appears to be relatively little information available concerning command and control doctrine used in the past. For this reason, the writer undertook a study of recent military history in order to trace the evolution of command and control doctrine for organic Army aviation from 1942 to 1961. It was initially intended that this study would cover the period from 1942 to the present. Research disclosed, however, that major changes in organization and doctrine which occurred in 1961 are still being tested and that any attempt to accurately record at this time command and

control techniques and procedures involving these most recent changes would be premature.

The scope of the study was further confined to command and control doctrine used in Army divisions during the period mentioned, with emphasis on the infantry division. This was done to keep the subject within manageable limits, to permit concentration on the major aviation organizations used during this period, and to simplify the presentation of material.

It is the purpose of this paper to provide the reader with a record of the most important developments in the evolution of doctrine for the command and control of organic divisional aviation during the 19-year period reviewed and to provide a source of reference data for more detailed study of the subject. In preparing this paper, the writer has attempted to place only the facts before the reader for his consideration and evaluation.

The method used in conducting research for this paper was as follows. Chronological order was utilized as far as possible. The total period covered by the paper was broken down into separate chapters covering specific periods of development. As each period was considered, tables of organization and equipment were examined along with other documents in order to determine the command structure, the equipment authorized, and the general aviation capabilities of the different types of divisions under various circumstances. Next, attention was focused on the men who commanded or controlled aviation units. Their qualifications, training, and position within

the division were considered. To obtain information on how division aviation was controlled during the different periods of development and under each new organization, maximum emphasis was placed on information available in combat reports, unit standard operating procedures and personal accounts of officers who were directly involved. Field manuals and other training literature were also examined along with test reports and other information available in the archives of the U. S. Army Command and General Staff College. Finally, environmental factors and other factors were considered, and, where strengths and weaknesses were identified in reference materials, special attention was devoted to these areas. As far as possible the sequence listed above is followed in the presentation of material in this paper.

The writer wishes to acknowledge the following individuals for their invaluable assistance in preparing this paper.

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Mrs. Peter W. McGurl - typist, able assistant, and tolerant wife.

The writer hopes that information contained in this paper will in some way be of assistance in developing sound doctrine for command and control of organic division aviation, so that it may continue to provide the type of support necessary for the successful accomplishment of the ground tactical mission.

TABLE OF CONTENTS

| | Page |
|--|------|
| PREFACE | iii |
| LIST OF ILLUSTRATIONS | viii |
| INTRODUCTION | 1 |
| Chapter | |
| I. WORLD WAR II | 4 |
| Organization and Equipment | |
| Personnel | |
| North Africa | |
| Sicily | |
| Italy | |
| Western Europe | |
| Pacific Theater | |
| Summary | |
| II. THE POST-WAR YEARS 1945-1950 | 26 |
| Organizational Changes | |
| Major Developments | |
| III. THE KOREAN WAR | 37 |
| Background | |
| The UN Defensive June - September 1950 | |
| Breakout from Pusan and Operations Until November 1951 | |
| Tactical Stalemate November 1951 - June 1953 | |
| IV. TESTING AND REORGANIZATION 1953-1959. | 62 |
| Korean Aftermath | |
| ATFA Division Organization and Concepts | |
| Pentomic Division Organization and Concepts | |
| V. DIVISIONAL AVIATION 1959-1961 | 88 |
| Organization and Equipment | |
| Operation | |
| Summary | |

| | |
|----------------------------|-----|
| VI. LOOKING BACK | 9 |
| BIBLIOGRAPHY | 103 |

LIST OF ILLUSTRATIONS

| Figure | Page |
|--|------|
| 1. Infantry division aviation organization, 1942-1945 . . . | 6 |
| 2. Infantry division aviation organization, 1945-1948 . . . | 28 |
| 3. Infantry division aviation organization, 1948-1952 . . . | 30 |
| 4. Infantry division aviation organization, 1952-1959 . . . | 54 |
| 5. Infantry division provisional aviation organization in Korea, 1953 | 59 |
| 6. ATFA infantry division aviation organization, 1954-1955 | 68 |
| 7. ATFA infantry division aviation organization, 1955-1956 | 73 |
| 8. ROCID aviation organization, 1956-1959 | 77 |
| 9. Infantry division aviation organization, 1959-1961 . . . | 90 |

INTRODUCTION

When the United States entered the Second World War, doctrine for employment of aviation in support of the Army called for the pooling of all aviation resources into an air force under a theater or similar commander.¹ Army divisions at that time contained no organic aviation. In 1942 divisions acquired some aviation capability when aircraft and pilots were made organic to artillery units.² This concept of organic divisional aviation has continued to develop and expand ever since. Two of the key features of this "organic" aviation have been the assignment of aviation elements to "using" units and control of these aviation resources at the lowest possible levels. Before discussing doctrine which has been used for the command and control of this organic divisional aviation, it is necessary to clarify a few definitions in order to avoid misunderstanding.

The Dictionary of United States Military Terms for Joint Usage defines the words "command" and "control" as follows: "command- 1. The authority vested in an individual of the armed forces for the

¹ Kent Roberts Greenfield, Col. Inf. Res., Army Ground Forces and the Air Ground Battle Team Including Organic Light Aviation, Study No. 35 (Fort Monroe: Historical Section, Army Ground Forces, 1948), p. 3.

² Memo, WDGCT 320.2, U.S., War Department, for CGs AGF and AAF, 6 June 1942, Subject: "Organic Air Observation for Field Artillery."

4

direction, coordination, and control of military forces",³ and "control- Authority which may be less than full command exercised by a commander over part of the activities of subordinate or other organizations."⁴ The term "command and control" is defined as follows: "Command and control - An arrangement of personnel, facilities and means for information acquisition, processing, and dissemination employed by a commander in planning, directing, and controlling operations."⁵ Recent usage of the term "command and control", especially in connection with US Air Force operations, refers more specifically to the communications systems used to direct and coordinate air activity.⁶ Throughout this paper, the words "command" and "control" are used separately as defined in the joint dictionary.

Many other terms associated with organic aviation changed considerably during the period covered by this paper. For example, the men who flew the Army's aircraft were Army Ground Forces pilots in 1942 but later were called Army aviators, and an L-4 airplane was known at various times as a Cub; aircraft, 2 place, fixed-wing; and airplane, observation. No attempt has been made to standardize

³ U.S., Joint Chiefs of Staff, Dictionary of United States Military Terms for Joint Usage, JCS Pub. 1 (Washington: U.S. Government Printing Office, 1 December 1964), p. 32.

⁴ Ibid., p. 36.

⁵ Ibid., p. 32.

⁶ U. S. Army Command and General Staff College, U.S. Air Force Basic Data, R3 101-1 (Fort Leavenworth, Kansas: U.S. Army Command and General Staff College, 15 March 1965), p. 28.

military terminology in this paper because to do so would create confusion when referring to the sources of information quoted.

Block diagrams used in this paper showing the assignment of organic aviation elements within the division (Figures 1 through 9) have been standardized for simplicity and ease in comparison. The arrangement of blocks are not exactly as they appear in references; however, the command relationships shown are accurate and the original designations of organizations, units, and elements are used.

CHAPTER I

WORLD WAR II

Organization and Equipment.

Organic aviation was authorized in Army divisions by War Department order on 6 June 1942. This order provided two low performance "Piper Cub" type aircraft, two pilots, and one mechanic to each division artillery headquarters and each field artillery battalion within the division. Infantry divisions with their four artillery battalions and division artillery headquarters were authorized a total of ten aircraft; armored divisions, because they contained only three artillery battalions and had no division artillery headquarters, were given only six.¹ In September of 1943, with the incorporation of a division artillery headquarters in the armored division, the total aircraft in these divisions was increased to eight.² Other type divisions, such as airborne divisions, were similarly authorized organic aviation based on the criteria stated above. Aircraft were placed in divisions to provide an aerial platform from which to conduct observation and adjust artillery fires. For this reason, sections were called air observation sections, air O.P.'s, or air OP sections. Tables of organization and equipment

¹Memo, WDGCT 320.2, U. S., War Department, for CGs AGF and AAF, 6 June 1942, Subject: "Organic Air Observation for Field Artillery."

²U. S., War Department, Armored Division, TOE 17 (Washington: U. S. Government Printing Office, 15 September 1943), p. 2.

(TOE's), published in 1943, included the equipment and personnel of the air OP sections in the headquarters and headquarters batteries of field artillery battalions and division artillery (Figure 1). The significance of this assignment will be discussed later. L-4 "Piper Cubs" were in short supply in 1942, and, even though production and procurement were greatly increased, it was not until late in 1943 that divisions in the field received most of the aircraft authorized.³ The Army Air Forces were responsible for supplying repair parts and for maintenance support.

Personnel.

Trained pilots and mechanics to man the air sections were not available in 1942 because a program had not been set up to provide the type of training required. Once the program was underway, pilots and mechanics were assigned to divisions at about the same rate that aircraft became available for them to fly. As personnel and equipment reached the field, air sections were put together by the senior officer-pilot in the unit. It was not until March of 1943 that the War Department published doctrine covering command and control of these sections, in Training Circular Number 24. In this circular, commanders' and senior pilots' duties and responsibilities were listed as follows:

a. Unit commanders are responsible for the proper training and tactical employment of the air observation section, and for first and second echelon maintenance of the aircraft.

b. The pilot assigned to the division artillery . . . headquarters battery functions as the artillery air officer on the staff of the field artillery commander. He commands the air observation section of the headquarters battery. He functions as the artillery airplane engineering officer. In addition to his duties as a pilot, he makes frequent technical inspections of the

³ Kent Roberts Greenfield, Col. Inf. Res., Army Ground Forces and the Air Ground Battle Team Including Organic Light Aviation, Study No. 35 (Fort Monroe: Historical Section, Army Ground Forces, 1948), p. 57.

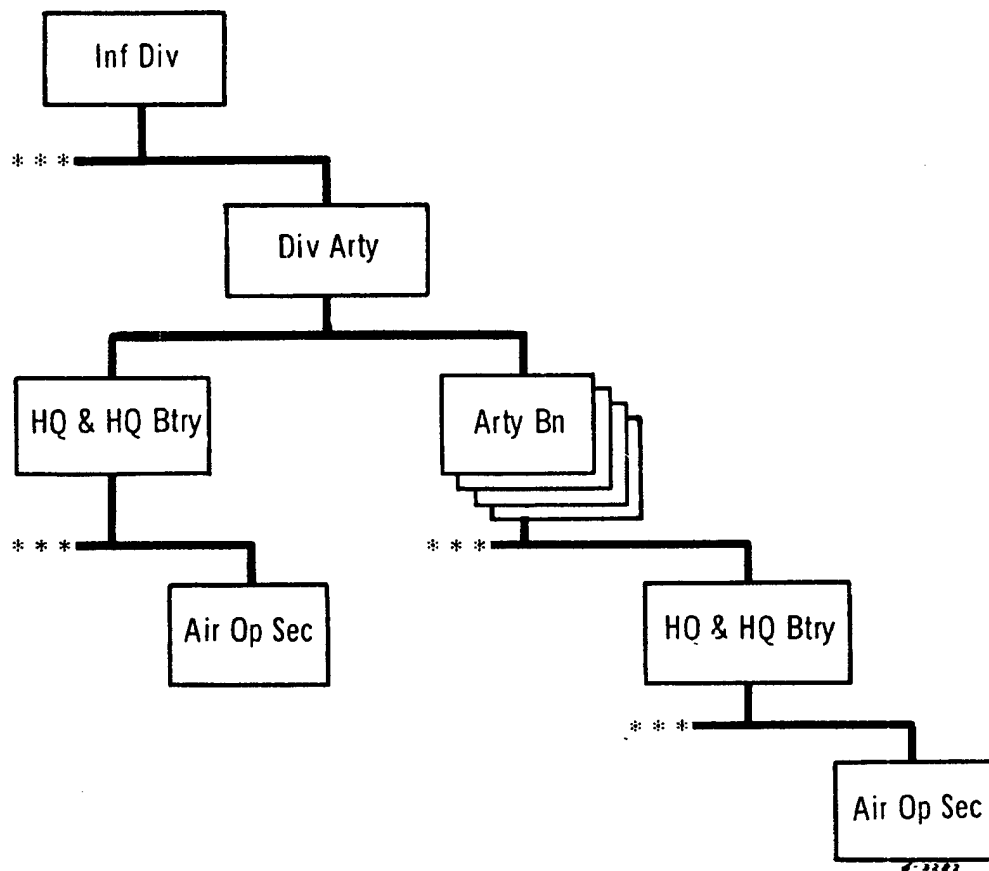


Figure 1.--Infantry division aviation organization, 1912-1915.

airplanes and technical records, and supervises the performance of first and second echelon repairs. He keeps on file pertinent Army Air Force Technical Orders.

c. The snior pilot in a battalion headquarters battery commands the air observation section. He supervises the training of the section personnel. He is responsible for the maintenance and repair of the airplanes and for the requisition of fuel, supplies and spare parts, and keeps the prescribed maintenance and parachute records.⁴

Since air-observation sections were assigned to the headquarters batteries of the division, the unit commanders referred to in paragraph a above were the commanders of these batteries, the division artillery officer, and, in certain respects, the division commander. None of these commander were rated liaison pilots. Normally the senior officer-pilot in the division (usually a captain) was assigned to division artillery headquarters battery and performed the staff and supervisory duties listed in paragraph b in addition to his primary duties as a pilot and section leader. This gave him considerable control over the operation of the other air observation sections in the division, but unfortunately the amount of time he could devote to staff duties was limited. A brief examination of the pilot training program of this era provides an insight into the qualifications of the officers who held such assignments as well as those who led the other air observation sections in the divisions.

Prior to 6 June 1942, all aviation training in the Army was conducted by the Army Air Forces (AAF). All AAF liaison pilots at this time were staff sergeants, and it was decided that, beginning in September 1942, 100 of these pilots could be sent to Fort Sill each month to receive the necessary tactical training from the Department of Air Training of

⁴ U. S., War Department, Organic Field Artillery Air Observation, TC 24 (Washington: U. S. Government Printing Office, 1 March 1943), p.1.

the Field Artillery School. These noncommissioned officers were then to be assigned as Army Ground Forces (AGF) personnel in the air observation sections of divisions. In addition to the AAF source of pilots, the Ground Forces called for volunteers within the AGF who had sufficient flight experience to qualify as liaison pilots. The initial plan for pilot procurement did not work well, and a number of modifications were made in the last six months of 1942.

Early in 1943 the system was modified again, and a procedure was set up which remained substantially unchanged until 1956. Branch trained AGF officer volunteers were sent to AAF primary flight training. They qualified as liaison pilots and then returned to the AGF for tactical training and assignment in organic air sections. It had been originally intended that only 20% of the pilots would be officers, to provide supervision. The failure of the plan was explained by Richard K. Tierney in "The Army Aviation Story":

. . . the enlisted men who were able to perform an acceptable job as liaison aviators were usually officer candidate school material. Consequently, enlisted pilots generally left troop units for OCS shortly after reporting for duty. The War Department decided it would be better for enlisted personnel to attend OCS before going to flight school, and on 20 April 1943 enlisted men ceased to be eligible for liaison pilot training.⁵

In July 1943, the TOE's for field artillery battalions in divisions were changed to show the pilots as commissioned officers; however, sufficient officer pilots were not available, so the enlisted pilots on hand were either commissioned, if qualified, or carried as excess in

⁵ Richard K. Tierney, The Army Aviation Story, Fred Montgomery ed. (Northport, Alabama: Colonial Press, 1963), p. 75.

grade until replaced.^{6,7}

Although most of the commissioned liaison pilots were artillery officers, a few were obtained from other branches. In addition to being fully qualified in their branch, they were rated as liaison pilots by the AAF and given additional training in tactical employment of organic aviation by the Department of Air Training at Fort Sill.⁸ With no actual combat experience to draw on, these officers were, nevertheless, well prepared to try this new concept and to command and control organic divisional aviation in combat operations. The first test was to come in North Africa.

North Africa.

The first division to receive aircraft and crews was the 3d Infantry Division. Just prior to sailing for the invasion of North Africa in October of 1942, three of the division's L-4's were loaded aboard the aircraft carrier USS Ranger. They were to be flown ashore at Fedala, Morocco and employed after initial assault landings were completed. On 9 November, the day after the first landings, the three Cubs took off from the Ranger 60 miles at sea and headed for the airfield at Fedala. What followed points up the complete lack of coordination and control in this operation and the need for developing doctrine for employment of air sections. First, the flight was fired

⁶U.S., War Department, Field Artillery Battalion, Infantry Division, TOE 6-26, Change 1 (Washington: U.S., Government Printing Office, 15 July 1943), p. 1.

⁷Letter, Headquarters, Army Ground Forces to CG 30th Inf. Division, 23 August 1943, Subject: "Surplus Staff Sgt. Pilots in Field Artillery."

⁸Tierney, p. 68.

on by the USS Brooklyn and other ships of the invasion fleet when they were mistaken for enemy aircraft. Next, the flight split up, the flight leader continuing on towards Fedala while the other two Cubs flew north away from the invasion site, landed, and were captured by Vichy French Forces. The flight leader attempting to reach the airfield was fired on again by French Forces, then by units of the 2d Armored Division, and finally shot down short of his destination by Vichy French machine guns.⁹ Because it joined the force so late and employment doctrine had not been developed, there had been no definite plan for integrating the efforts of this new air section into the overall scheme of the invasion, and it is interesting to note that the "Combat History of the 3d Infantry Division" makes no mention of this fiasco in telling the invasion story. Things had to get better!

During the months following the invasion, November 1942 to February 1943, U. S. divisions were committed in piecemeal fashion. Air observation sections were formed in the 1st and 2d Armored Divisions and the 1st, 3d, 9th, and 34th Infantry Divisions during this period. Because their units were not heavily committed until the Tunisian Campaign, a number of the pilots joined the 651st British Squadron with the British 5th Corps, which was in the thick of it. This combat experience with the British was utilized in the training program at Fort Sill and was incorporated in the operation of air observation sections when the pilots returned to their divisions.¹⁰

Conditions in North Africa had a decided impact on air section

⁹ Ibid., p. 122.

¹⁰ Ibid., p. 126.

operations. Air Sections initially had to operate under conditions of enemy air superiority which demanded maximum dispersion and seriously restricted flights. Terrain throughout most of the area of operations was favorable, and good landing sites could be found almost anywhere. Although winter is the wet season around the Mediterranean, adverse weather did not seriously affect air operations. Because of these factors, artillery battalions kept their air sections fairly close to the battalion position and division artillery headquarters did not exercise much control or supervision over the section's activities.

Little is written on just how these first sections operated, but from what is available, some general statements can be made. It seems likely from the absence of references in the combat histories and after action reports of the divisions that, during the first five or six months in North Africa, organic aviation was not employed extensively. Perhaps a statement appearing in a lesson plan of the Command and General Staff School is indicative of the "thinking" during this time.

In the operations platoon is the air observation section. This section will have two slow-flying planes of the so-called liaison type, one of which will always be in reserve. These planes are extremely vulnerable to hostile ground fire and fighter aviation and must be used with great care. In general, they will fly no further forward than battery positions and may be considered as merely well-elevated OPs. If there be hostile aviation about the flights of these artillery planes will be strictly limited both as to altitude and duration. The observation squadrons of the Air Force will still have the mission of adjusting fire of distant targets.¹¹

In the first few months, operation of the section was left to primarily two people in each artillery battalion and division artillery headquarters - the headquarters battery commander and the section leader. The battery

¹¹U.S. Army Command and General Staff School, Field Artillery Organization, (Fort Leavenworth, Kans.: The Command and General Staff School, 21 April 1943), p. 3.

commander provided personnel, administrative, and some logistical support for the section but was not technically qualified to evaluate the operation of the section or qualifications of its personnel. Aircraft repair parts and supplies were obtained by the section directly from Army Air Force sources. The chain of command went from the division commander to division artillery commander to artillery battalion commander to headquarters and headquarters battery commander, then to the air observation section leader. During combat operations, however, the battery commander was by-passed, and missions assigned by the battalion commander were passed to the section by the S-3 or battalion fire direction center (FDC). The S-3 or FDC actually controlled the section by the manner in which it assigned flight missions.

Three major problem areas developed which were traced directly to a lack of knowledge and understanding on the part of commanders and to inadequate supervision and control. These were:

1. Inadequate medical supervision of pilots.
2. Laxity in the enforcement of flight safety regulations.
3. Poor aircraft maintenance and supply procedures.

A fourth problem emerged at the same time and although it was thought by some to be caused by the same deficiencies, this was not the case. Many officers in the combat zone complained that artillery planes were being used chiefly on reconnaissance missions and to run errands for ground headquarters and were not being properly utilized for the adjustment of artillery fires.¹² The AAF used these reports in an unsuccessful

¹²Greenfield, p. 59.

13

attempt to regain control of the organic aviation program. To understand why the artillery's airplanes were directed to other missions, it must be remembered that U. S. divisions were not heavily committed at this time, and artillery units did not have a continuing need for their aircraft; consequently, they were "loaned out" to other elements of the division to perform missions of importance to the division as a whole.

The situation changed drastically in March and April of 1943. Major redistribution of allied forces brought U. S. divisions face to face with stiff axis resistance in the Tunisian Campaign. The allies gained air superiority, and air sections, now nearing authorized strength, were committed fully in their primary role of adjusting the artillery fires of the division. Commanders gained confidence in the capabilities of the little planes as their effectiveness was proven in daily combat operations. Most division artillery commanders also began to realize the need for increased supervision of subordinate air observation sections. In order to provide this supervision, control over the operation of these sections by the senior pilot in the division artillery headquarters battery was tightened in line with his additional duties as a special staff officer as prescribed in TC 24.¹³ This was the first use of the centralized control concept.

Sicily.

In the summer of 1943, the Sicilian campaign exposed air sections to some new problems. Terrain was more rugged, suitable landing areas scarce, and some difficulties were encountered with turbulence

¹³Training Circular 24, p. 1.

and high altitudes when sections operated from landing fields close to their battalion's positions. This situation was remedied in most divisions by consolidation as described in Report Number 2 of "Artillery in Combat."

Organization for control. Where you have to operate in such country as Sicily, where there are so few airfields for the cubs, we found the best method of operation was to create a pool of ten planes under control of the division artillery with the Division Artillery Air Officer in charge. The planes then were allotted to missions as called for by battalions. This worked very well and we recommend it whenever the terrain is like it is here.¹⁴

The Sicilian campaign saw the centralized control concept come into full bloom. This method of controlling the division's organic aviation was to be used extensively in all theaters of operation during the remainder of the war.

Although there were many minor variations in the way organic aviation was handled under centralized control, this is the way it generally worked. Personnel and equipment remained assigned to their respective battalion headquarters batteries which continued to provide personnel, administrative, and logistical support. Aircraft and crews were based at one or more fields located some distance to the rear. The individual exercising the greatest amount of control over these sections was the division artillery air officer, who in addition to his duties as a section leader and pilot was on the division artillery staff. In some cases this officer was only involved in technical supervision of the sections and operation of the airfields from which they flew with the sections responding directly to their parent battalion FDC's for mission

¹⁴U.S. Army Field Artillery School, Artillery in Combat, Report No. 2 (Fort Sill, Oklahoma: The Field Artillery School, August 1944) p.10.

assignment. At the other extreme, he exercised a form of operational control over all sections, received mission requests from artillery battalions, assigned pilots to fly these missions, and in general ran what amounted to a division aviation section of ten airplanes. Under these circumstances, battery commanders had virtually no direct contact with their air sections. This technique was so successful that during the summer of 1943 the War Department seriously considered, but rejected, organizational changes which would have put all of the artillery planes under the centralized control of division headquarters.¹⁵
Italy.

Italy was invaded in September of 1943 and, in their drive up the peninsula, divisions continued practices which had been used successfully in Sicily. When the enemy situation and terrain permitted, the Cubs operated out of battalion air strips and were closely controlled by their battalion. But as was so often the case when suitable landing sites were scarce, enemy air ineffective, and supply and maintenance difficulties encountered, air sections were gathered in to a central airfield in the division rear area under the control of the artillery air officer.

In December 1943, an artillery air officer position was added to the division artillery staff by the War Department. This provided the division artillery commander with a full time aviation staff officer, in the grade of major, to assist him in the control of his air sections. Training Circular Number 132, published on 14 December, included a list of his duties. In addition to advising the commander and staff on all

¹⁵ Greenfield, p. 59.

matters pertaining to organic air observation, the artillery air officer supervised flight operations, coordinated training plans, supervised training of air observation personnel, and acted as a coordinating agency for aircraft maintenance and supply. The circular also stated:

He has no command functions, but should be authorized to issue orders in the name of the Commander and in furtherance of the Commander's policies with respect to the operation, training, maintenance, and supply of the organic air observation of the command.¹⁶

Only one statement, under "Supervision of Training," conceded any degree of control to commanders. This read:

While the tactical training of organic air observation personnel should be under the immediate supervision of the Unit Commander concerned, the technical training of pilots, air mechanics, and artillery officers to act as observers should be supervised by the artillery air officer.¹⁷

As the war progressed, resourceful commanders and pilots found an ever increasing list of tasks which could be performed by the versatile Cubs. This, coupled with the fact that Army Air Forces had failed to provide adequate support to the ground forces - especially in the fields of aerial photography, reconnaissance, and liaison-led to increasing use of the division's artillery planes on other missions. Under centralized control, with all ten airplanes operating out of one airfield well to the rear, it was possible to maintain one in the air at all times during daylight hours, have one from each artillery battalion on strip alert for specific fire adjustment missions, and

¹⁶U.S., War Department, Organic Field Artillery Air Observation, TC No. 132 (Washington: U.S. Government Printing Office, 14 December 1943), p. 1.

¹⁷Ibid., p. 2.

still have a few left to fly other missions. Normally, elements of the division requiring light aviation support contacted the Division Artillery Commander or his representative (usually his S-3) to obtain permission to use the aircraft. The Artillery Air Officer then coordinated the mission, assigned the pilot and aircraft from the pooled resources under his control and monitored the conduct of the mission by radio. The system worked well and other senior commanders in the division began to request that organic aviation be authorized in their headquarters. Colonel L. S. Griffing, an Army Ground Forces Board Observer with the 85th Division Artillery in Italy, noted:

Use of Air OP

Centralization of Air OP's has been maintained. A continuous air patrol is maintained during daylight hours to observe enemy activity on the Division front and picks up opportunity targets. Additional planes are sent up when enemy artillery is active or numerous special missions are to be performed. The planes have proven very valuable in adjusting fire and as a source of information for the artillery. They have been versatile in furthering the cause of the entire division in that they located front line elements by reading prearranged signal lamp messages: and have dropped messages of timely information concerning enemy disposition to our front line troops.

.....

There is a tendency to establish air strips too far forward, with a resultant loss of planes and personnel from enemy artillery fire. A good rule is to keep the air strip just back of the maximum range of hostile artillery fire . . . One of the 608 radios of Division Artillery Headquarters is placed at the air strip to allow the Division Artillery Air Officer to communicate with any plane on any channel.¹⁸

This was typical of the reports coming out of Italy and exemplifies the employment techniques used and the concepts found in manuals and training

¹⁸
Observers Report, Army Ground Forces Board, Subject: "Operational Policies and Experiences, 85th Division Artillery, 10 April to 10 June 1944" (AFHQ, NATO, 13 July 1944), p. 7.

systems of that period.¹⁹ Concerning the expanding use of artillery Cobs for other than fire adjustment missions, Report Number 3 of "Artillery in Combat" had this to say about operations against the Gustave and Hitler lines.

The two most abundant sources of information of enemy locations and movements were results of prisoner of war interrogation and visual observations by personnel in artillery cob planes. Planes were in the air constantly during the day and often on moonlight nights. Every hour or less during the offensive the division artillery S-2 was reporting locations of enemy self-propelled guns, tanks, trucks and infantry movement.²⁰

In a sample Standard Operating Procedure for U. S. infantry divisions prepared by The Army War College based on experiences in Africa and Sicily, it is interesting to find that the only mention made of organic aviation required aviation elements to report essential elements of information when observed.²¹

Sicily and Italy were the real proving grounds for the air observation section. Doctrine developed there was perfected and refined in other theaters during the remaining months of the war. Field manuals and service school lessons were revised to include the techniques and procedures for commanding and controlling organic aviation found most effective in combat.

Western Europe.

When forces were massed in England and plans prepared for the

¹⁹ Ibid., p. 1.

²⁰ U. S. Army Field Artillery School, Artillery in Combat, Report No. 3 (Fort Sill, Oklahoma: The Field Artillery School, Jan. 1945), p.22.

²¹ U. S. Army War College, S.O.P. for a U. S. Infantry Division (Washington: Headquarters, Army Ground Forces, 18 May 1944), p. 6.

assault across the channel, organic divisional aviation was integrated far more effectively than it had been in the invasion of North Africa and the results were excellent. Planes from the 1st, 4th, and 29th Divisions were adjusting fires, including naval gunfire, by D+1.²² Conditions encountered in the assault and later in the sweep across France and Germany did not greatly change the organization or operation of divisional aviation, although generally speaking, missions did increase both in volume and variety. Allied air superiority encouraged consolidation of planes at one field even though suitable landing sites were in abundance and mountainous terrain was not encountered. Here again, the division's airfield was usually located well to the rear because of the danger from enemy artillery. Poor flying weather limited air operations considerably at times, but in spite of the differences in environment, sections operated quite a bit like they did in Italy.

On 30 August 1944, FM 6-150, Organic Field Artillery Air Observation was sent to the field. This new manual contained a list of duties for the artillery air officer and senior battalion pilot very similar to the one in TC 132. The influence of experiences in Sicily and Italy was evident in a paragraph entitled "Mountain Warfare, Centralized Operation."

In mountain warfare it is sometimes necessary to operate the airplanes of the division or group from one field under centralized control. When operating Air OP's under centralized control, the senior field artillery commander, assisted by his artillery air officer, is guided by the following principals.

(1) Coordination of missions. As far as possible, control and employment of the air observation should be left with the unit commanders. However, to prevent unnecessary duplication of missions

²²Tierney, p. 153.

flights should be coordinated. An airplane should not be sent aloft if it's mission can be accomplished by another airplane already in the air.²³

In a paragraph on staff relationships, the fact that staff sections should be familiar with the needs, capabilities, and employment of air OP's was emphasized and the specific responsibilities of the S-2 and S-3 in briefing and debriefing pilots for aerial observation missions were stated.²⁴ The headquarters battery commander as the "Unit Commander" was held responsible for all personnel, administration, supply, and maintenance functions of the section.²⁵

From 1944 until the end of the war centralized control was the normal method of operation in the European Theater of Operation.²⁶ A typical after action report entry on air OP activity read:

One Div Arty Air Strip maintained; planes of all battalions held under centralized control of Div Arty. 97th Div Arty planes continuously patrolled the 97th Div Sector and also flew requested missions.

Missions

| | |
|----------------|-----------|
| Fire Missions | 38 |
| Administrative | 20 |
| Reconnaissance | 245 |
| Registrations | <u>12</u> |
| Total Missions | 315 |

One airplane damaged by shell fire beyond repair. Pilot unhurt. Observer, 1st Lt Carl H. Rogers, observer, wounded, 15 April.

²³ U. S., War Department, Organic Field Artillery Air Observation, FM 6-150 (Washington: U.S. Government Printing Office, 30 August 1944), p. 54.

²⁴ Ibid., p. 27.

²⁵ Ibid., p. 56.

²⁶ First United States Army, Report of Operations 1 Aug. 1944 to 22 Feb. 1945 Annex 4, Sect VI (Europe: First United States Army HQ, February 1945), p. 19.

(One plane shot down. Pilot observer found dead in 78th Div zone, 11 April 1945.²⁷

In order to operate effectively, artillery commanders augmented their centralized air sections with additional observers, vehicle drivers and trucks, cooks and mess equipment, radio operators and signal equipment, and guards to provide security for the division airfield.²⁸ Studies conducted by The Army Ground Forces General Board at the end of the war in Europe recommended that tactical doctrine provide for both centralized and decentralized employment and that the section organization be revised to include the necessary additional personnel and equipment.^{29,30}

Pacific Theater.

Because the war in the Pacific was given second priority, L-4's and crews were not available there in large quantities until early in 1944. In February of that year the 43d Division became one of the first to receive all of their aircraft and crews.³¹ The environment in the southwest Pacific and the nature of operations conducted there greatly affected the command and control of air sections. Island hopping pre-

²⁷ Headquarters, 97th Division Artillery, After Action Report No. 2, 21 April 1945 to 9 May 1945 (97th Division Artillery APO 445, 11 May 1945), p. 6a.

²⁸ The General Board, USFET, Report on Study of Organic Field Artillery Air Observation, Study No. 66 (USFET, 1945), p. 18.

²⁹ Ibid., p. 35.

³⁰ The General Board, USFET, Organization and Equipment of Field Artillery Units, Study No. 59 (USFET, 1945), pp. 7, 43.

³¹ Harold R. Barker, History of the 43d Division Artillery (Providence, R. I.: John F. Green Co., Dec 1960), p. 117.

32
sented a tremendous challenge to the ability of divisions to get their aircraft operational during the assault landings, and once ashore the rugged terrain and dense jungle growth were at times an even more insurmountable obstacle. Japanese infiltration skill was a major consideration in locating airfields and providing security for them. As in Europe, the missions performed by the Cubs, in addition to fire adjustment and observation, ran the gamut from medical evacuation to aerial bombardment; imagination of pilots and commanders and the capabilities of the planes were the only limitations.³²

Task-force-type organization for combat, available shipping, and the distance to the objective usually determined the air OP organization for assault landings. If an entire division participated in the operation and sufficient shipping was available, all ten airplanes were usually placed under the control of division artillery and taken along. In other cases where less than the entire division was employed, only a proportionate share of the airplanes was used and control was frequently decentralized. The Cubs reached the objective area by flying from aircraft carriers, LSTs on which flight decks had been erected, or ships fitted with the Brodie device (a hook and loop arrangement whereby the aircraft could land or take off from a wire stretched between two poles).³³ If the objective was within range, the airplanes were flown all the way to the objective area from an advanced base. When these methods were not possible, they were partially disassembled,

³²Greenfield, p. 111.

³³Tierney, p. 168.

moved in by assault craft, and reassembled on the beach.

Once a beachhead was secured, the sections either reverted to battalion control or continued to operate under the control of the artillery air officer. The major determining factors here were the organization for combat, availability of suitable flight strips, and enemy activity (particularly infiltration tactics and artillery fire). FM 6-150, published before extensive experience in jungle air operations had been acquired, was very brief in explaining the system of operation to be used in jungle warfare. It stated simply: "Because of the scarcity of landing fields and the problem of supply, occasionally the air OP may have to operate under centralized control."³⁴

In summarizing the activities of artillery in combat on Leyte, the Artillery School stated:

All division artilleries operated their L-4's somewhat like a squadron under division artillery control thereby improving maintenance, supervision, and assignment of missions, as well as accomplishing economy of force.³⁵

Reporting on the same operation, Sixth Army said:

Some divisions established centralized control over their aircraft and constructed base strips 20 miles to the rear of the forward strips. Forward strips were constructed near artillery command posts for daytime operation.³⁶

In reviewing after action reports of the divisions involved, both centralized and decentralized control techniques are evident. For example,

³⁴FM 6-150, p. 51.

³⁵U. S. Army Field Artillery School, Artillery in Combat, Report No. 4 (Fort Sill, Oklahoma: The Field Artillery School, July 1945), p. 118.

³⁶Sixth U.S. Army, Report on the Leyte Operation 17 Oct - 25 Dec 1944 (Pacific Theater: Headquarters Sixth U. S. Army, Dec. 1944), p. 226.

the 96th Division preferred centralization and used this method on Leyte.³⁷ The 43d Division on the other hand favored battalion control for this operation, and, although air sections from two or more battalions flew from a common airfield, control was essentially decentralized.³⁸ The conflict between the Artillery School's views of the Leyte operation and division after action reports is probably a result of different interpretations of what constituted centralized control.

In the Pacific, unlike Europe, divisions frequently shifted from one method of control to another because of the nature of island hopping warfare. Generally speaking, on small operations involving less than the entire division, air OPs remained under battalion control.³⁹

Summary.

After almost three years of experience with air observation sections in combat, relatively few changes had been made in the basic concepts. By the end of the war only commissioned officers were being accepted for flight training. A more important change had been the addition of the artillery air officer to the division artillery staff. But perhaps the most significant development during this period was that

³⁷ Headquarters, 96th Division Artillery, After Action Report, King II Operation, Leyte (Pacific Theater: HQ, 96th Division Artillery, 31 December 1944), p. 2.

³⁸ Barker, p. 212.

³⁹ Headquarters, 77th Division Artillery, Action Reports Ryukyus Campaign 26 March-30 June 1945 (Pacific Theater: HQ, 77th Division Artillery, June 1945), pp. 14, 17, 24.

the assignment and command of air sections remained decentralized, while control was frequently centralized by division artillery commanders. The details for control of organic aviation activity had been well worked out, but no solutions had been found to the command problems resulting from the assignment of aviation sections to headquarters batteries whose commanders were neither technically qualified to evaluate the sections' performance nor directly involved in their day to day operations.

CHAPTER II

THE POST-WAR YEARS 1945-1950

Organizational Changes.

In the years between World War II and Korea, two major changes occurred in the organization of aviation in Army divisions. The first of these changes, made in 1945, greatly increased the number of air sections and provided an aviation staff section at division level. The second change, occurring in 1948, gave the division two more airplanes and placed all of the division's aircraft, except those in division artillery, into the division headquarters company. It is necessary to discuss these changes to understand how doctrine for command and control shifted during this period.

Responding to demands from the field to increase the amount of organic aviation within divisions, the War Department on 9 August 1945, just five days before the end of the war, authorized a total of 16 liaison airplanes in each infantry, airborne, and mountain division, and 17 in each armored division.¹ In Infantry divisions, an air section consisting of one plane, one lieutenant pilot, an enlisted mechanic, and a small amount of equipment was authorized in each of the three regimental headquarters companies. A three aircraft section

¹Kent Roberts Greenfield, Col. Inf. Res., Army Ground Forces and the Air Ground Battle Team Including Organic Light Aviation, Study No. 3 (Fort Monroe: Historical Section - Army Ground Forces, 1948), p. 113.

with a captain, two lieutenants, and three enlisted men was added to the division headquarters company. Air observation section organization in division artillery units was not changed.² The decentralized control concept was followed in placing aircraft down with the using units. Additional aviation was similarly assigned in other types of divisions.

The only pilot specifically assigned as a staff officer prior to this time was the artillery air officer, a major, who was on the division artillery commander's staff.³ To provide staff supervision over all organic aviation in the division, a small section was added to the division staff with the publication of a change to the TOE of division headquarters in December of 1945.⁴ This change authorized a lieutenant colonel and two technical sergeants in the aircraft section, thereby giving the division commander the means to control and to coordinate the activities of his nine organic aviation sections. See Figure 2 for the organization of aviation in infantry divisions 1945 to 1948.

With the addition of liaison aircraft to infantry, armor, and cavalry units, officers from these branches were trained as liaison pilots along with artillery officers.⁵ To provide well qualified,

²U.S., War Department, Infantry Division, TOE 7 (Washington: U.S. Government Printing Office, 12 April 1946), p. 3.

³U.S., War Department, Headquarters and Headquarters Battery, Motorized, Division Artillery, Infantry Division, TOE 6-10-1 (Washington: U.S. Government Printing Office, 1 June 1945), p. 2.

⁴U.S., War Department, Headquarters, Infantry Division, TOE 7-1, Change 2 (Washington: U.S. Government Printing Office, 5 Dec 1945), p. 1.

⁵Richard K. Tierney, The Army Aviation Story, Fred Montgomery ed. (Northport, Alabama: Colonial Press, 1963), p. 77.

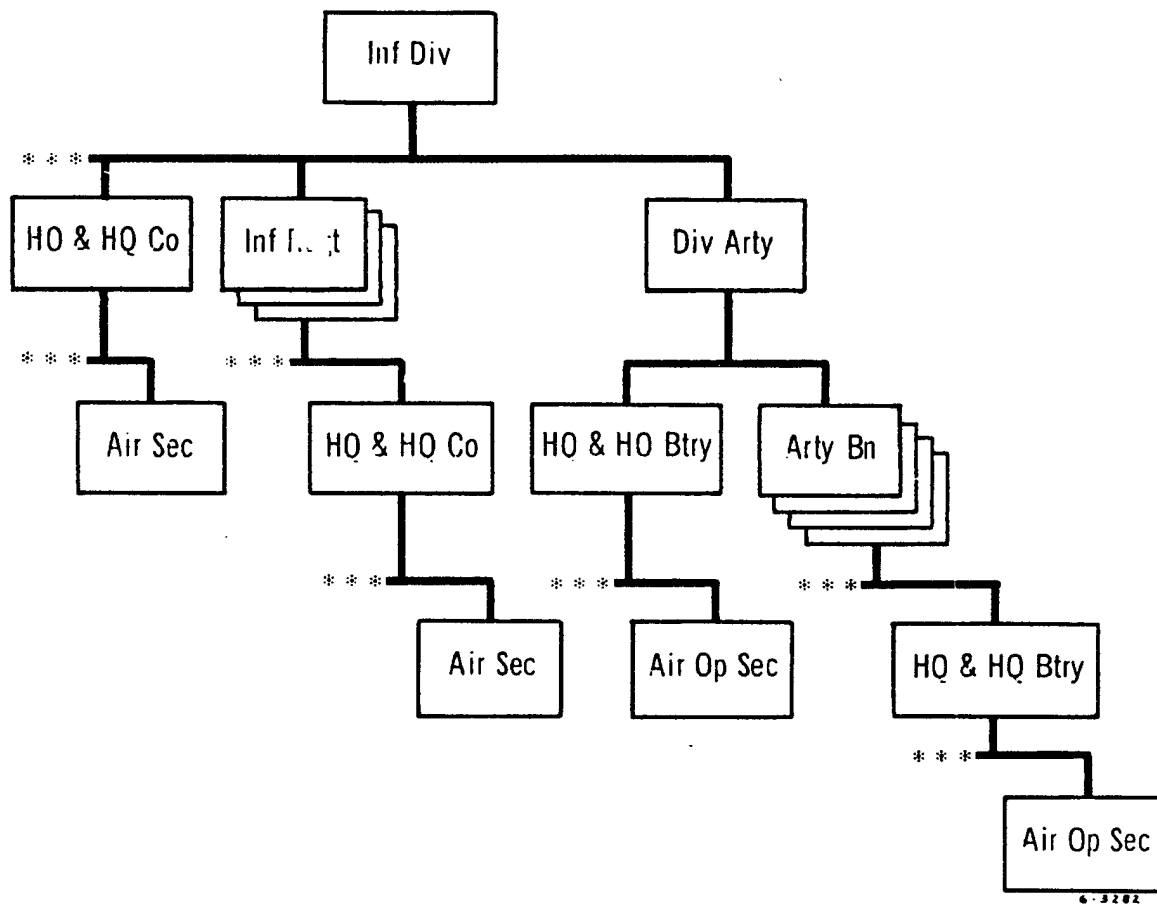


Figure 2. Infantry division activation organization, 1945-1948.

experienced personnel to divisions, regulations required that officers have a minimum of one year of branch duty prior to receiving flight training. On completion of flight school, these officers were usually assigned to divisions for two or three years as pilots in air sections. If their aviation experience, age, and relative efficiency ratings were such that their branch decided to retain them on flying status, while performing ground duty assignments and attending service schools, pilots could expect further aviation assignments in a division as follows:⁶

| Year of Commissioned Service | Rank | Duty |
|------------------------------|---------|---|
| 11-13 | Captain | Assistant light aviation officer-regiment, division artillery or division |
| 18-20 | Major | Light aviation officer division headquarters |

In 1948 it was decided to consolidate the aircraft previously assigned in the regiments or combat commands with those in division headquarters. At about the same time, two more aircraft were authorized in the division, and these were also placed in the division headquarters company, (see Figure 3).⁷ This arrangement provided more centralized control. The reasons for pooling the aircraft in this manner will be discussed in some detail later. In the division artillery headquarters battery the rank of the artillery air officer was reduced to captain

⁶ U.S., Department of the Army, Career Management for Army Officers, TM 20-605 (Washington: U.S. Government Printing Office, June 1948), p. 21.

⁷ U.S., Department of the Army, Infantry Division, TOE 7N (Washington: U.S. Government Printing Office, 7 July 1948), p. 4.

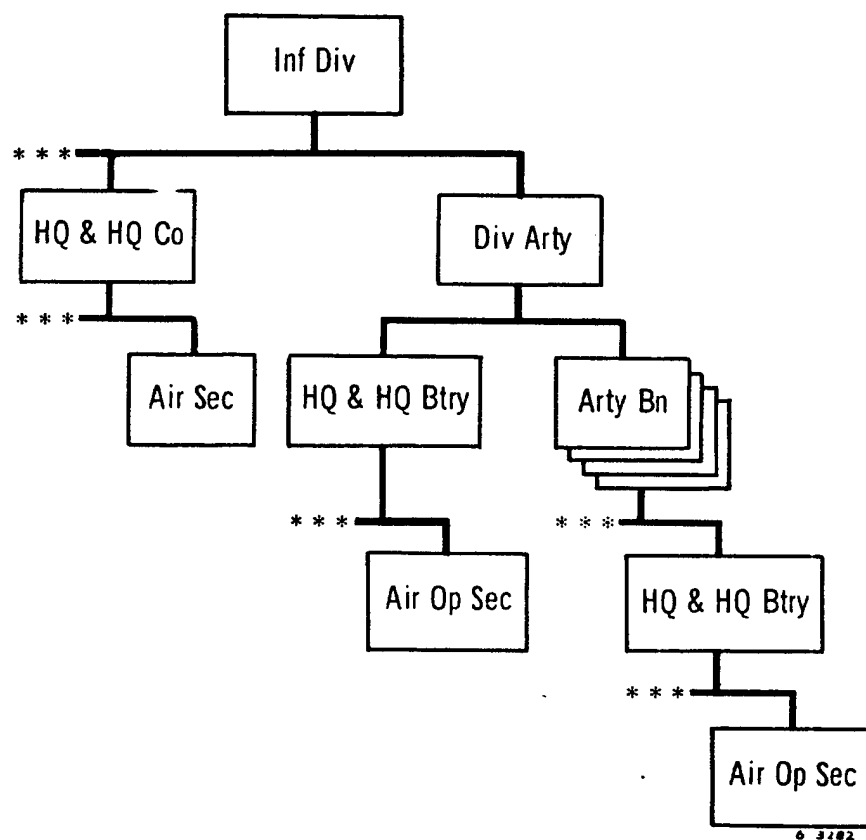


Figure 3.—Infantry division aviation organization, 1948–1952.

and the additional duty of air section leader was assigned to this position by a change to the TOE in May of 1948.⁸ This was done because the division air officer had assumed many of the artillery air officer's former duties. In addition to these changes in organization, the post-war air sections were slightly better equipped with vehicles, radios, and mess gear, giving them an improved capability to operate away from their parent unit.

Major Developments.

Evolution of doctrine for the command and control of organic aviation progressed very slowly in the late 1940's. In spite of significant changes in organization, the basic concepts worked out by the artillery for air observation sections were generally carried over and applied to infantry, armored, and cavalry air sections. In the realm of command, headquarters company commanders faced about the same problems in commanding and providing support for their air sections that headquarters battery commanders had been wrestling with since 1942, the most serious of these problems being the ability of commanders to evaluate the air section's performance.

In the supervision and control of air section activity, three significant developments occurred during this period. They were: the publication of specific guidance in FM 20-100,⁹ the gradual realization

⁸ U.S., Department of the Army, Headquarters and Headquarters Battery, Division Artillery, Infantry Division, TOE 6-10-1N (Washington: U. S. Government Printing Office, 26 May 1948), p. 4.

⁹ U.S., War Department, Army Ground Forces Light Aviation, FM 20-100 (Washington: U.S. Government Printing Office, 9 September 1947), p. 1.

that air traffic over the division zone would have to be controlled more closely, and the partial abandonment of the decentralization control concept in assignment of aircraft within the division.

FM 20-100.

FM 20-100 was the only field manual published between the wars dealing specifically with Army light aviation. Although it was based on 1945 TOE's, it was used for general guidance after major organizational changes were made in 1948. The manual provided a list of duties for air officers on the division and division artillery staffs. These duties were to assist the commander and staff by:

- (a) Advising within the command on all matters pertaining to Army Ground Forces light aviation.
- (b) Preparing, coordinating, and supervising plans for training, employing, replacing, and relieving Army Ground Forces light aviation personnel.
- (c) Acting as a coordinating agency to insure rapid procurement and distribution of aircraft and aircraft supplies, parts, and equipment.
- (d) Supervising and coordinating the selection, preparation, operation, and improvement of landing strips and landing fields.
- (e) Inspecting for compliance with applicable regulations and directives concerning the operation and maintenance of aircraft and the maintenance of prescribed forms and records.

At regimental or battalion level, the manual specified that: "The senior pilot assigned to an infantry regiment, artillery battalion, or similar unit having an air section commands this air section and also acts as the unit air officer with duties as outlined . . . above."¹⁰ The actual operation of air sections organic to various types of units and the missions they would be required to perform were discussed in some length in FM 20-100, but very little guidance was provided on command and staff relationships at section level. In actual practice,

¹⁰ Ibid., p. 4.

the division G-3 and regimental S-3s normally assigned missions to air sections in much the same manner as did the S-3s and fire direction centers in division artillery.¹¹ This system, as described in Chapter I, by-passed the company or battery commander in the operational chain of command.

Air Traffic Control.

The control of air traffic had not been a serious problem for divisions during World War II, but technological advances and the increase in divisional aviation began to change this. During the war close air support aircraft flew relatively slow and could be easily identified and avoided by liaison pilots. In addition, artillery fire direction centers were able to keep pilots briefed on friendly air strikes, thereby avoiding interference by either aircraft. Since the winter of 1944, when VT (radio proximity) fuses were first used by the artillery, this danger to aircraft was minimized by vectoring them out of the area: a simple radio message from the FDC over the fire direction net was all that was required. Pilots were warned of the presence of hostile aircraft in the same manner. Once air defense units learned what L-4's and L-5's looked like, their presence in the forward areas did not create serious problems, especially since US forces enjoyed air superiority throughout most of the war.

The necessity for air traffic control became more obvious as the speed of close support aircraft increased and additional divisional aircraft (not in direct radio contact with fire direction

¹¹Ibid., pp. 98, 111, 115.

centers) became involved.¹² It was also realized about this time that, in any future conflict with a sophisticated enemy, the presence of a large number of aircraft operating over the division zone could present a myriad of problems to air defense units charged with identifying and destroying hostile aircraft. Additional problems developed in the vicinity of landing fields which were used by more than one air section. The question was asked; who is responsible for the organization and operation of these fields? FM 20-100 suggested that the "senior commander" should supervise and coordinate activities with the assistance of the unit air officer.¹³ This was not a satisfactory solution because it was difficult to identify the "senior commander" in many cases.

It was gradually realized that control of air traffic could become a problem of major proportions, but no significant steps were taken to prevent this aside from the 1948 reorganization which did simplify matters somewhat.

Centralized Assignment of Aircraft.

Due to extensive demobilization carried out after the war, a general shortage of equipment and personnel made it impossible in most divisions to keep air sections at full strength.^{14, 15} The

¹² Ibid., p. 45.

¹³ Ibid., p. 48.

¹⁴ R. Earl McClendon, Army Aviation 1947-1953, Air University Documentary Research Study (Maxwell AFB, Alabama, May 1954), p. 5.

¹⁵ Tierney, p. 77.

shortage of even one or two airplanes was seriously felt because of the manner in which they were parcelled out in small numbers throughout the division. In garrison-duty situations, prevalent within Continental United States during this time, all division aircraft were usually based at one field for control, security, ease of maintenance, and supply, and also because there was frequently only one suitable airfield readily accessible to the cantonment area. Under these conditions centralized control was inevitable.

The first departure from the policy of assigning aircraft to the using unit was made when the army realized that under the circumstances it would be more efficient to pool some of the division's aircraft in the division headquarters company. This was done in July, 1948, and a partial solution to problems in air traffic control, equipment shortages, maintenance, and supply was realized.¹⁶

The division air officer's duties were simplified by the reduction in his span of control and the advantage of having to deal only with the division commander and division artillery commander on major issues pertaining to air section operation. In most cases, the division artillery air officer (a captain) controlled the operation of air sections assigned to artillery units though the individual section leaders under the staff supervision of the division air officer. In the division headquarters company there was no aviation staff officer provided, so the light aviation section leader (a captain) controlled the eight aircraft section under the staff supervision of the division

¹⁶ U.S., Department of the Army, Headquarters Company, Infantry Division, TOE 7-2N (Washington: U. S. Government Printing Office, 7 July 1948), p. 2.

35

air officer. This section provided light aviation support for all elements of the division other than artillery units on a mission basis, with the division aviation officer determining mission priority based on guidance received from the division commander.

After organizational changes made in 1948, very little was done to alter the command and control of divisional aviation until after the outbreak of hostilities in Korea. The Army did take over responsibility for maintenance of its organic aircraft in 1949, but this development did not substantially revise the aircraft maintenance situation within divisions.

CHAPTER III

THE KOREAN WAR

Background.

Without the Korean War it is doubtful that divisional aviation doctrine would have progressed more than a step or two during the period between the end of the World War II and the early 1960's. As costly as that war was, its occurrence in the early 1950's brought about considerable changes in organic aviation. Even though it is generally agreed that experiences in Korea reaffirmed the soundness of U. S. doctrine, tactics, techniques, organization, and equipment for most Army units, this was not the case with organic aviation elements.¹ Although other Army aviation elements throughout the world contributed to the evolution of doctrine during this period, their impact was almost insignificant in comparison to the influence of techniques developed by the divisions fighting in Korea. Consequently, this chapter will deal almost exclusively with the manner in which these combat divisions commanded and controlled their aircraft and why changes became necessary.

Prior to the North Korean invasion, all U. S. divisions had been withdrawn from South Korea. Those divisions stationed in Japan, the

¹ U. S. Military Academy, Operations in Korea, Department of Military Art and Engineering, U. S. Military Academy (West Point, N.Y. USMA, A. G. Printing Office, Feb. 1953), p. 48.

first to be committed to the battle, were operating at reduced strength, and both aircraft and pilots were in short supply. With the exception of the one L-17 (a fairly modern four passenger liaison airplane) in each division, aircraft were old and obsolete. Maintenance and supply support, transferred from the Air Force to the Army in 1949, still presented problems for division and lower level commanders because ordnance aircraft maintenance units were assigned at army level and not under division control.² One of these ordnance light aircraft maintenance companies provided field maintenance support for all Army aircraft located in Japan. Because of shortages and supply and maintenance difficulties, a great deal of interest was generated in the creation of an aviation company at division level even before the start of the Korean War. This company would contain all aircraft in the division. The increased efficiency and improved utilization which had resulted from placing all but division artillery planes in the division headquarters in 1948 was pointed out by many advocates of the aviation company concept.

The environment in Korea contrasted sharply with that encountered in the two major theaters of operation during the Second World War. Rugged terrain, scarcity of suitable landing areas, and frequent adverse flying weather conditions in Korea were detrimental to combat air operations. Divisions committed in this environment were authorized almost twice the number of aircraft as World War II divisions, even though the basic division structure had not been substantially altered.

² U.S., Department of the Army, Ordnance Light Aircraft Maintenance Company, TOE 9-148 (Washington: U. S. Government Printing Office, 22 September 1949), p. 1.

Under these conditions, major changes in command and control doctrine were inevitable.

The UN Defensive June - September 1950.

The 24th Infantry Division was the first U. S. division to be employed in an attempt to slow the North Korean attack. This division began arriving in Korea on 2 July 1950, followed closely by the 25th Infantry and 1st Cavalry Divisions. With the enemy pushing rapidly down the Seoul-Taejon axis toward Pusan, these divisions were immediately committed to fight a delaying action to gain time for a buildup of forces in the Pusan area. The primary missions of all division aviation sections at this time were reconnaissance and surveillance, regardless of which unit in the division they were assigned to. In "Operation Grasshopper", the situation in July is explained as follows:

. . . Lack of any other means of communications placed a great responsibility upon army fliers to provide the ground commanders with intelligence information which was badly needed. Because of the shortage of troops on the ground, it became necessary for Army air reconnaissance to spot the enemy forces so that UN troops already in the theater could be maneuvered into the most effective defensive positions Because of the rugged terrain features of the battleground, air observation was essential to accomplish the delaying action which was demanded by events.³

Divisions set up a system of continuous dawn-to-dark aerial surveillance over their areas of interest to obtain maximum information on enemy movements. With shortages of aircraft and pilots and many maintenance problems, this was a difficult task. In their eagerness to get the job done during the first few hectic weeks, air sections frequently lost their identity as all aviation resources were employed under the

³ Dario Pclitella, Operation Grasshopper (Wichita, Kansas: The Robert R. Longo Company, Inc., April 1958), p. 14.

control of the division aviation officer.⁴ Division 3-2's, chiefs of staff or, in some cases, division commanders personally directed the aviation effort and provided the aviation officer with mission priority guidance.⁵ A main flight strip was usually located quite close to the division command post to provide a high degree of responsiveness, reduce requirements for additional airfields, and simplify communications.

As the tactical situation stabilized with the establishment of the Pusan perimeter, aviation missions increased. Artillery fire adjustment accounted for a greater share of the sorties flown. More divisional aircraft were used to direct tactical air strikes, and pilots averaging 100 flying hours per month were hard pressed to keep up with requests for all types of missions. In this atmosphere, each division on line in Korea developed its own technique for commanding and controlling organic aircraft. Personnel and equipment remained assigned to division headquarters company, the four artillery battalions, and division artillery headquarters, but, in most cases, assignment of air sections was not a major consideration in deciding on a method of control. Therefore, sections still belonged to one commander but performed their missions under the control or direction of another commander or staff officer.⁶

TOE changes in September 1950 authorized three multi-passenger

⁴Ibid., pp. 17, 29.

⁵Personal interview with Eugene M. Lynch, Lt. Col., Inf., U.S.A., Aide-de-Camp and personal pilot to 8th Army Commander in Korea, July 1950 to May 1951, 24 February 1966.

⁶Ibid.

airplanes and a helicopter in each division but did not increase the total number of aircraft.^{7,8} These new aircraft were not available in the theater during the defense of Pusan, but their arrival in divisions will be discussed later in this chapter.

Breakout from Pusan and Operations until November 1951.

During the period between the start of the UN offensive in September 1950 and the stalemate which began in November 1951, the tactical situation was extremely fluid and a number of changes occurred to divisional aviation. To maintain continuity, it is best to review the most important developments in chronological order as far as possible, briefly considering the impact of each on the command and control techniques and procedures used by divisions in the theater.

Centralized Division Control.

The first two divisions to use a form of centralized control in Korea were the 25th Infantry and the 1st Cavalry. In contrast, the 24th Infantry division initially did not consolidate but left the control of artillery air sections in the hands of division artillery battalions. As was the case during most of the war, the decision to place all division aircraft under the operational control of the division aviation officer was left to the division commander, who was primarily influenced in his actions by the recommendations of his

⁷U. S., Department of the Army, Headquarters Company, Infantry Division, TOE 7-2N, Change 1 (Washington: U. S. Government Printing Office, 18 September 1950), p. 3.

⁸U. S., Department of the Army, Headquarters and Headquarters Battery, Division Artillery, Infantry Division TOE 6-10-1N, Change 1 (Washington: U.S. Government Printing Office, 8 September 1950), p. 2.

aviation officer and the desires of the division artillery commander.⁹ Major advantages to centralized control were: improved over-all control, efficiency of operation, maximum utilization of resources, ease of maintenance and supply, equitable distribution of missions between pilots, improved local security, and minimum airfield requirements. The disadvantages to such a system were: reduced responsiveness to artillery commanders, loss of direct contact between pilots and artillery firing units, and a separation of artillery air sections from their command headquarters. The controversy over centralized control raged back and forth throughout the war. Good and bad aspects of this system become more apparent when personal accounts of air section operations are examined, and changes in the tactical situation and air section equipment are considered.

Helicopters Arrive.

In February 1951, divisions began to receive H-13 helicopters (a two place machine referred to in TOEs as a rotary wing utility aircraft). Only one was authorized in each division headquarters company, and it was used primarily for transportation of the division commander and staff, emergency medical evacuation, and reconnaissance. Its use was closely controlled and scheduled by the air officer. Because of its unique capabilities and characteristics, the helicopter presented control problems. Some of these were:

1. Special training required for pilots and mechanics.
2. A third different type of aircraft in the division.
3. Increased supply requirements: parts, special tools, P.O.L.

⁹ Lynch Interview.

4. Great increase in the number of landing areas used by division aircraft.

5. Different mission capabilities from other divisional aircraft.

Regardless of control problems, commanders of major units immediately recognized the advantage of having a helicopter available for their use in that rugged terrain and requested assignment of these new machines below division level.¹⁰ Even though many facets of helicopter operation were best handled under centralized assignment and control, their overall performance capabilities were best exploited by placing them down with the using unit.

L-19's Replace Obsolete Airplanes.

The replacement of old observation airplanes with new all metal L-19's, starting in February 1951, was a big step forward. The new aircraft were much easier to maintain, required less maintenance per flying hour, and were more reliable. Better instrumentation and improved radio equipment gave the L-19 expanded capabilities and provided more effective communication between ground stations and airborne aircraft.¹¹ These features substantially reduced the need for centralized control and aviation officers were more prone to release L-19's to the regiments and other subordinate units for extensive periods of time. Artillery battalions were also able to work more closely with their organic air sections than was previously possible, especially when

¹⁰ U.S. Army Artillery School, Report of The Artillery School Representative, AAF Observer Team No. 2, The Korean Campaign September to October 1950 (Fort Sill, Oklahoma: The Artillery School, 27 November 1950), pp. 7, 28.

¹¹ Politella, p. 48.

suitable airstrips could be found near battalion positions.

Divisional Aviation Brought up to Strength.

As the war progressed, divisions gradually were able to bring air sections up to strength. Reservists were recalled to fill personnel shortages, aircraft and equipment were rushed to the Korean front, and, with the new L-19's and H-13's in service, aviation resources within divisions became sufficient to meet tactical requirements and provide some flexibility in methods of operation and control.¹² Additional methods of control emerged which were based on the division organization for combat. Two situations which occurred quite frequently and called for modification of the command and control aspects of organic aviation support were: the organization of regimental combat teams (RCTs) and the retention of division artillery in the line when the remainder of the division was pulled back into reserve.

When RCTs were formed, it became common to organize a "regimental" air section, using as a nucleus the air section of the artillery battalion which was attached or in support of the regiment. One or two aircraft and crews from the division headquarters air section were attached or placed in support of this section. The artillery battalion air section leader was usually designated as the "regimental" air section leader and in addition functioned as the air officer on the RCT commander's staff.¹³ In combat reports from Korea, many favorable comments are made in reference to this type of "regimental" air section.

¹²Ibid., p. 35.

¹³Lynch Interview.

In divisions which had not centralized the control of their aviation, very little difficulty was experienced when the division artillery was placed in support of other units while the remainder of the division was in reserve or moved to another sector, for this was their normal method of operation. In divisions with centralized control, some difficulty was experienced in this situation as explained by Captain Hawkins, a pilot in the 2d Infantry Division.

The first six weeks of the . . . period, the Division Aviation Section was organized into two separate sections, and operated from separate airfields. These two sections consisted of the Division Artillery Aviation units as one section and Division Headquarters units as the other. This division in the aviation section was made necessary because the 2d Infantry was in a different sector and being supported by the British Commonwealth Division Artillery.

This organization presented a number of problems in that the operation up until this time had been as a combined aviation section, using a common airfield. The problems, although some minor in nature, were primarily those of supply, mess, and types of aircraft left in each section. Also the problem of communications presented itself in the Division Headquarters Section.¹⁴

This account indicates that even after division air sections were brought up to full strength, there was a reluctance to decentralize in divisions which had been operating a consolidated air section, even when the tactical situation demanded such action!

Excellent support provided to RCTs and artillery on separate operations and the close working relationships established in these situations greatly strengthened the argument of those who advocated decentralized assignment and control of division aircraft.

Control of Air Traffic.

Due mainly to the superb performance of the Air Force in

¹⁴U.S. Army Aviation School, Monographs of Personal Experiences in Army Aviation in Korea, Report No. 6, prepared by Capt. Edward S. Hawkins (Ft. Rucker, Ala., U. S. Army Aviation School, 1954), p.6-1.

gaining and maintaining air superiority in Korea, no serious problems developed in the control of Army Air Traffic over the division zone. The North Koreans and Chinese did not use light aviation, so anything that flew low and slow was readily identified as an Army aircraft. Because of this, identification friend or foe (IFF) electronic equipment was not required nor was it necessary to provide air defense elements (Army or Air Force) with flight plan information on division aircraft.¹⁵ The main reasons for establishing any form of air traffic control were: to facilitate safe operation in the vicinity of flight strips, to reduce the possibility of mid-air collision, and to assist pilots in avoiding friendly artillery fires. The frequent use of division aircraft to direct fighter strikes caused additional concern as Dario Politella explains in "Operation Grasshopper":

Often the air was so packed with L-19's, F-51's, and F-80's working over the enemy forces that the pilot's chief concern was to avoid mid air collisions. The hazards of the air operations were increased because the artillery was using proximity fuses which were set to explode the shells whenever they came within short distances of solid objects.¹⁶

Even though the problems in air traffic control anticipated in the late 1940's did not materialize to the extent expected, difficulties which were encountered were best overcome by reducing the number of airfields in the division, by providing a good G-2 and G-3 briefing for all pilots, and by establishing one air traffic control net through which all airborne aircraft could be contacted at any time. These

¹⁵ Artillery School Report, AFF Observer Team No. 2, p. 33.

¹⁶ Politella, p. 58.

conditions could be met by centralizing control of all aviation under the division air officer with all operations conducted from one airfield.

Increased Staff Coordination.

As Army aviation was used to perform an increasing volume and variety of missions, effective operation of its aviation means became more vital to the division. A higher degree of staff coordination was required to obtain maximum benefit from the employment of the divisions aircraft than was necessary when artillery adjustment was the primary air mission. A great deal of the responsibility for the coordination and integration of this aviation effort fell on the shoulders of division aviation officers. To provide the best qualified men to fill these positions, Eighth Army carefully assigned each one.¹⁷ These officers developed many of the staff techniques and procedures for control of aviation which are still in use today. It is interesting to note that, as late as 1952, the U. S. Army Command and General Staff College did not consider the aviation officer's functions sufficiently important to discuss them in the presentation of its class on infantry division staff procedures.¹⁸

Other division staff sections became more involved in organic air operations as new emphasis was placed on available support. G-2's were anxious to make sure that adequate aerial surveillance was provided over the division zone and that aircraft were available to

¹⁷Lynch Interview.

¹⁸U.S. Army Command and General Staff College, Infantry Division Staff Procedures, Subject No. 5025/52-53, (Fort Leavenworth, Kansas, USACGSC, 1952).

obtain aerial photographs and to reconnoiter. G-3's wanted aircraft to conduct liaison, adjust fires, direct close air support strikes, and assist them in monitoring the conduct of ground operations. G-4's were concerned with coordinating the use of aircraft for emergency resupply of isolated units and, with the advent of helicopters, aeromedical evacuation in the division zone. G-1's and special staff officers also became more involved in various aspects of aviation section operations. Aviation officers working more closely with other division staff officers devised ways of providing the aviation support necessary, and, although this was not the first instance of such, it became more common to find aviation resources placed under the control of general staff officers as a matter of SOP for certain specific missions, ie., aerial surveillance aircraft under the operational control of the G-2.¹⁹

When the new edition of FM 20-100 was published in February 1952, some of these staff coordination procedures developed in the field were included in a very brief paragraph as follows:

Staff Coordination.

a. In small units, the activities of the aviation section are coordinated with other elements of the command by the unit commander or his executive. In larger units, the commander may designate a general staff officer to perform this coordination. In the former case, the aviation officer reports directly to the unit commander; in the latter, he reports to the designated staff officer, usually the G-3 or G-2 (S-3 or S-2).

b. Detailed staff coordination on specific matters is accomplished by direct contact between the unit aviation officer and other members of the staff as follows:

(1) Procurement of personnel, including individuals who do not hold the designation Army Aviator selected for observation training: S-1 and S-3.

(2) Collection of information: S-2

¹⁹ Headquarters, 1st Cavalry Division, Intelligence Standing Operating Procedures (APO 201, Headquarters 1st Cavalry Division, 17 July 1952), pp. 2, 4, 10.

- (3) Aerial reconnaissance: S-2 and S-3
- (4) Maps and photographs: S-2 and unit engineer
- (5) Survey: S-2 and S-3
- (6) Training: S-3
- (7) Selection and defense of landing areas: S-3, executive or headquarters commandant.
- (8) Observation and adjustment of fire: S-3
- (9) Procurement of aviation supplies and maintenance of aviation equipment: S-4
- (10) Signal communications, including codes and call signs and the procurement and maintenance of signal equipment: Communications officer
- (11) Evacuation: S-4 and unit surgeon.²⁰

It is easy to see how division aviation officers who were given control over all organic aviation could reduce the amount of staff coordination required while, at the same time, standardizing methods of operation and improving the overall effectiveness of aviation support.

Tactical Stalemate November 1951 - June 1953.

Development of a tactical stalemate starting in November 1951 greatly simplified the aviation situation within divisions. The overall influence of the situation on organic air operations tended to cause divisions to pool their resources and centralize control to an even greater extent.

From the fall of 1951 until the cease-fire, the tactical action was characterized by a pattern of limited objective attacks by both forces.²¹ Most of this action did not involve movement of the entire division; consequently, division airfields were not moved as frequently. It became possible to set up a division main airfield far enough in the rear to be out of range of effective enemy artillery fires. All

²⁰ U.S., Department of the Army, Army Aviation, FM 20-100 (Washington: U.S. Government Printing Office, 25 February 1952), p. 10.

²¹ Operations in Korea, p. 43.

division aircraft were normally based at this type of field.²² In addition to the division main field, a number of airstrips and helicopter landing areas were prepared throughout the division zone in close proximity to major units. Aircraft used these auxiliary facilities in supporting units nearby.

With little ground movement occurring, requirements for organic aviation support diminished. In addition to this, aviation missions were easier to forecast and schedule. Reconnaissance missions were fewer and less vital to the command and surveillance of the division zone became a matter of routine which normally required at least one aircraft airborne over the zone at all times during daylight hours. Artillery adjustment missions fell into a more predictable pattern, and liaison flights between elements of the division and from division to higher and adjacent units could be scheduled on a time table basis. With the slower pace of combat operations, the use of aircraft on most other types of missions could be preplanned. Since most of their aviation requirements were being satisfied on a regularly scheduled basis and additional support was readily available, commanders during this period were less adamant in their demands to own and control their own air sections.

The amount and quality of anti-aircraft defenses developed by the Chinese Communists and North Koreans in forward areas increased as the front lines became more stable.²³ Even though total air supremacy permitted unrestricted air operations over the division rear area,

²²Politella, p. 123.

²³Operations in Korea, p. 43.

anti-aircraft fires, seriously restricted flights over and forward of the main line of resistance. With observation aircraft flying higher and farther back to avoid being shot down, a measure of effectiveness was lost. With less airspace to operate in, the number of aircraft which could be profitably employed at any one time for observing enemy activity was decreased.²⁴

Two other tactical facets of the stalemate period should also be mentioned, even though they are of lesser importance than those already covered. The first of these facets was the skill and frequency with which the enemy employed infiltration techniques. It was much easier to provide local security for one airfield located well to the rear than for a number of widely dispersed landing fields close to the front lines. The other aspect was the enemy's adoption of increased emphasis on night operations, especially toward the end of the war.²⁵ Night flight missions against this threat were experimented with and it became obvious that, with the equipment available, these missions were only possible from well lighted flight strips which had the necessary communications and navigation equipment available (the division main flight strip).

During the stalemate period, changes continued to occur in aviation which were not directly tied to the tactical situation. Divisions continued to modify command and control procedures incorporating these adjustments in organization, equipment, and doctrine.

²⁴Richard K. Tierney, The Army Aviation Story, Fred Montgomery ed. (Northport, Alabama: Colonial Press, 1963), pp. 181, 182.

²⁵Operations in Korea, p. 47.

L-20's Replace L-17's.

The first L-20 arrived in Korea on 22 December 1951, but it was some time before divisions were issued these new utility airplanes to replace their L-17's. The real significance of this change in equipment was that the L-20 could lift a ton of cargo, carry two litter patients and one medical attendant or up to five passengers, whereas the L-17, which it replaced, had no appreciable cargo capability, was not rigged for carrying litter patients, and had accommodations for only three passengers.²⁶ Considering the tonnage involved in supplying a division in combat, the three L-20's authorized for each division were certainly no solution to the division's logistic problems, but it was at least the first real cargo airlift capability made organic to the division. In the support of isolated forces or rapid movement of critical supplies and equipment, the airplane was quite valuable, and G-4's began to see the need for exercising some control over L-20's. Aeromedical evacuation capability was also a matter of interest to G-4's. The airplane's aerial photography capability, and greater passenger capacity brought about increased interest on the part of G-2's and other staff officers. As a result of these new capabilities, closer staff coordination and planning was necessary to efficiently employ this new airplane.

TOE Changes.

On 15 May 1952, new TOEs were published which gave divisions many more aircraft. Infantry divisions were authorized 26 and armored

²⁶ Politella, p. 75.

divisions 28.^{27, 28} The most surprising thing about this change was that the assignment of these aircraft was decentralized at a time when most combat divisions were pooling their aircraft (see Figure 4). The increase in total numbers was a direct result of the expansion of requirements recognized during the first year of combat operations and the development of the small helicopter as a valuable means of battle-field mobility. The two most apparent reasons for not placing all aircraft in a single unit were: (1) the probability of opposition by the US Air Force to the formation of a squadron-sized aviation unit in the division, similar to the type of unit the Air Force had been proposing for many years, and (2) an effort to place aircraft down with using units to provide more responsive aviation support.

Under the new TOEs, air sections became organic to: division headquarters, regiments or combat commands, signal companies, engineer battalions, division artillery headquarters, and artillery battalions. In armored divisions, a section was also placed in the reconnaissance battalion. No additional staff officers were authorized, and it was assumed the new sections would be employed in much the same manner as artillery air sections, with the senior ranking pilot leading the section and acting as an advisor to the unit commander on organic aviation matters. Duties of the aviation officer on the division commander's staff were not changed, but, under the new TOEs, he had only three

²⁷ U.S., Department of the Army, Infantry Division, TOE 7 (Washington: U.S. Government Printing Office, 15 May 1952), p. 2.

²⁸ U.S., Department of the Army, Armored Division, TOE 17 (Washington: U. S. Government Printing Office, 29 December 1952), p. 27.

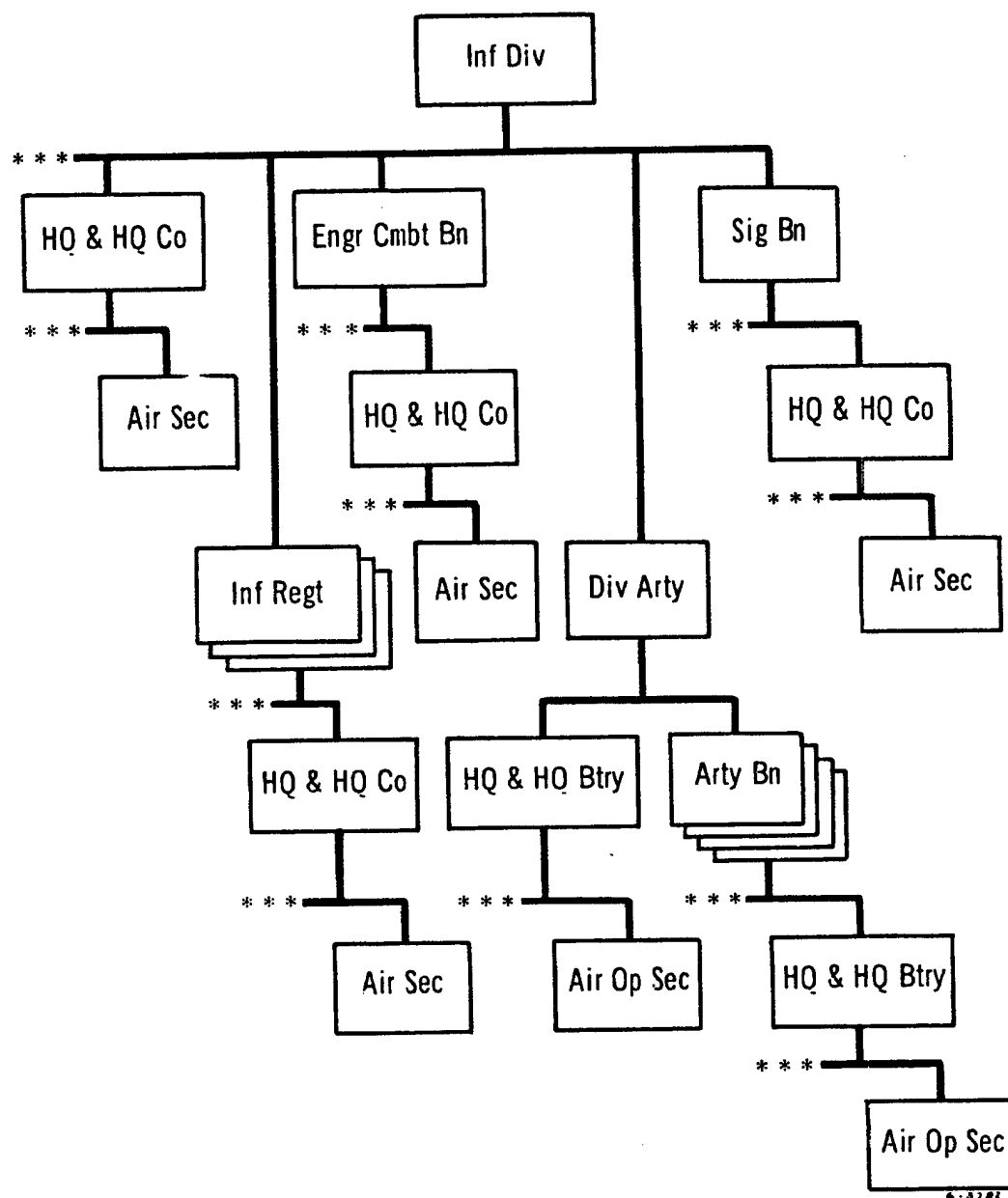


Figure 1. -Infantry division aviation organization, 1952-1959.

airplanes and three helicopters in division headquarters with which to satisfy all division headquarters and staff requirements.²⁹ On top of this, his job was complicated by the necessity to coordinate aviation activities with eleven subordinate commanders.

The dispersion of aircraft throughout the division had other drawbacks especially in the areas of supply, maintenance, and personnel. These shortcomings are quite apparent.

As so often happens, changes in organization and equipment were outmoded by developments in the combat zone, even before they were published. The new TOEs did not become effective until 15 November 1952, and even then aircraft were not available for issue. Disregarding the new TOEs, divisions in Korea continued to develop their own organizations and command and control techniques along centralized lines.

Transportation Corps Takes Over Aircraft Maintenance.

In August 1952, the Transportation Corps took over the task of providing field maintenance for Army aircraft.³⁰ This change did not increase the division's maintenance capability, but the relative stability of the tactical situation and an increased maintenance effort did substantially improve the condition of the aircraft flying in Korea.

One other change occurred at this time which should be mentioned in order to avoid confusion in terminology. With the take over by the

²⁹U.S., Department of the Army, Headquarters and Headquarters Company, Infantry Division, TOE 7-2 (Washington: U.S. Government Printing Office, 15 May 1952).

³⁰U.S., Department of the Army, Transportation Army Aircraft Maintenance Company, TOE 57-457 (Washington: U.S. Government Printing Office, 25 July 1953), p. 1.

Transportation Corps, official designations of aircraft in the division's inventory were changed as follows:

| <u>Aircraft</u> | <u>Old Designation</u> | <u>New Designation</u> |
|----------------------|---------------------------------------|----------------------------|
| L-4, L-5, L-16, L-19 | Aircraft, 2 place, fixed-wing | Airplane, observation |
| L-17, L-20 | Aircraft, multi-passenger, fixed wing | Airplane, utility |
| H-13, H-23 | Helicopter | Helicopter, reconnaissance |

The new designations will be used in the remainder of this paper.

Formation of Provisional Aviation Companies.

Most of the changes in aviation equipment and the development of a stabilized tactical environment encouraged divisions to consolidate their aviation sections. The situation within the 40th Division during the summer of 1952 is typical of divisions on line in Korea.

As Maj. Jennings, Headquarters Company Aviation Officer, explains it:

The 40th Div. had divided aviation sections when I was first assigned, one with Div. Arty. and the other Div HQ. This in itself posed to be quite a problem of duplication. These sections were located on the same strip of operation; however, each operated independently, to the extent that the only operation in common was flying off the same strip. These sections were united later during my tour with this organization and proved to be far more suitable for operation. By combining these sections, it improved on the following points:

1. Equalized the number of front line missions between the two sections. Gave each pilot the opportunity for rear area flights.
2. Better coordination on front line missions. All observers fired artillery missions as well as mortar missions. Previously when the sections were split Artillery fired theirs and the Infantry fired their own.
3. Centralized maintenance with more equipment and better supervision.
4. Reduced overhead personnel in administrative details of operation sections, mess, and security.³¹

³¹U.S. Army Aviation School, Monographs of Personal Experiences in Army Aviation in Korea, Report No. 12, prepared by: Maj. Harry G. Jennings (Ft. Rucker, Alabama, U. S. Army Aviation School, 1954) p. 12-1.

It is apparent from this account and many others that the majority of aviation personnel from the mechanics to the division aviation officers were in favor of consolidation.

In contrast to the many factors which encouraged consolidation, the only major change in organization during the war (decentralized assignment of aircraft in the 1952 TOEs) had the opposite effect. Capt. Lockwood, Operations Officer of the 3d Divisions Air Section, mentions a few of the problems in his account of the section's operation.

The administration of the air sections in Korea proved very difficult because the situation calls for pooling of air sections into a single unit in a division. This brought on many difficult situations. It made the Division Air Officer a Commanding Officer instead of a Special Staff Officer. The personnel were assigned to the TO&E units yet the Unit Commanders had no control over them, causing considerable friction between the lower ranking officers and their supposedly Unit Commanders. The officer personnel seemed to get assigned to the proper job as pilot, however the mechanics would quite frequently be assigned to a Battalion Motor Pool instead of the air section. This caused constant screening of records throughout the personnel sections in tracing these men and getting them reassigned to the Air Section. It caused numerous headaches in supplies of personnel equipment, the men being separated from their home unit resulted in them not always getting the proper and correct personal equipment.³²

Despite these difficulties, by January 1953 all of the divisions in Korea, except the 25th Infantry Division, had combined their air sections for centralized operation. In May, the Eighth Army Commander authorized the 7th Division to experiment with an Army Aviation Company.³³ This experiment proved so successful that, on 22 July, Eighth Army directed five divisions in Korea to organize provisional division

³²U.S. Army Aviation School, Monographs of Personal Experiences in Army Aviation in Korea, Report No. 14, prepared by: Capt. Samuel M. Lockwood (Ft. Rucker, Alabama, U.S. Army Aviation School, 1954), p. 4.

³³Politella, p. 154.

aviation companies (see Figure 5). In organizing these companies, aviation resources already in the division were used, and, to provide the necessary additional personnel, commanders were authorized to make adjustments within the division. Equipment, such as mess gear, was obtained on a 90 day loan basis.³⁴ In describing the concept of operation and principles of employment for these aviation companies, Eighth Army specified:

Command: The Division Aviation Officer is both a commander and staff officer. As a commander, he commands the division aviation company and is responsible to the division commander as a special staff officer, he coordinates with the division general and special staffs and subordinate unit staffs. His staff duties are supervised by the Chief of Staff directly with primary coordination with G2 and G3. Commanders of detached elements of the aviation company have parallel command and staff responsibilities to the organization to which the element is attached.³⁵

For the first time in its eleven year history, division organic aviation was placed under the command of a rated aviator. This one man was now responsible for all aspects of aviation operations within the division. On the other hand, commanders of major units throughout the division who had long since relinquished control of their air sections were relieved of the logistical and administrative support burden which they had carried when air sections were a part of their command.

When provisional aviation companies were organized, the control of division aviation operations was considerably streamlined. The division aviation officer, who was also the aviation company commander

³⁴Letter of Instructions, Headquarters, Eighth United States Army, to: Commanding Generals of 2d, 3d, 4th, 7th, and 45th Inf. Divisions, 22 July 1953, Subject: "Division Aviation Company (Provisional)" File No. R-17944.2 (6) Fort Leavenworth, Kansas Library), p.1.

³⁵Ibid., Annex 2, p. 2.

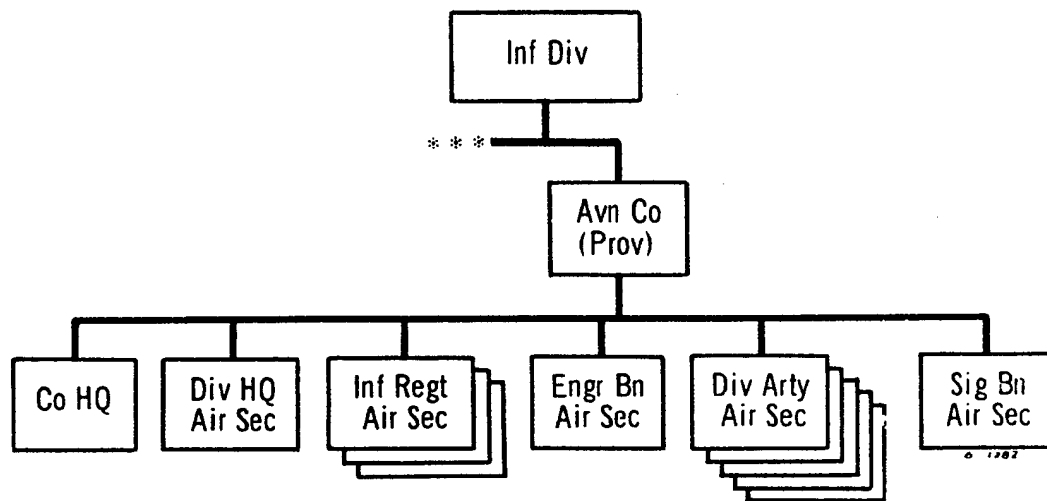


Figure 5. -Infantry division professional aviation organization used in Korea, 1953.

participated in the planning of division operations, was assigned specific missions and priorities for supporting the various elements of the division, and was directly responsible for the effective employment of the aviation company. The control system used in the 7th Infantry Division at this time is typical of the techniques used by provisional aviation companies in Korea.

In the 7th Division, all flight missions were scheduled by the aviation company operations officer. This captain, operating under the guidance and priorities given to him by the company commander, received mission requests from major units and division staff sections and assigned aircraft and crews to perform these missions. While airborne, pilots maintained radio contact with the unit concerned and also operated in the aviation company air traffic control net. The air traffic control net facilitated safe operations in the vicinity of division airfields, was used to warn pilots of air strikes or artillery fires which would interfere with their mission, and was employed for other control purposes. A representative from the division G-2 section was stationed at the division airfield to brief and debrief pilots. All company aircraft were based at one "division airfield", and, although auxiliary flight strips and helipads located throughout the division area were used extensively in the conduct of normal operations, the hub of all aviation activity in the division was the company operations facility at the division airfield.³⁶

³⁶ Personal interview with Robert A. J. Dyer Jr., Lt. Col. Inf., Operations Officer 7th Div. Aviation Company (Provisional), April 1953 to May 1954, 1 March 1966.

The provisional aviation company provided the solution for a number of perplexing problems but, regardless of how efficiently the company operated, aviation support was not as responsive to the needs of ground commanders as it had been and, since pilots were usually rotated on different types of missions, a measure of the personal contact and understanding between the pilot and the unit he was supporting was lost. To many commanders these were key issues.

The war ended on the 27th of July 1953, just five days after provisional aviation companies were organized, but the changes which had occurred and the experience gained during the three years of conflict indicated that the aviation company might be the most practical method of effectively commanding and controlling divisional organic aviation.

CHAPTER IV

TESTING AND REORGANIZATION 1953-1959

Korean Aftermath.

When the Korean War ended, Army Aviation was in a quandary. New organizations had been developed but not adequately tested, advances in aircraft design had not been fully exploited, the personnel situation had become more complicated, and there was very little agreement on how divisions could best command and control their aircraft.

On the bright side of the picture, however, Army Aviation had much to be proud of. Impressive gains had been made not only in the quantity but also in the quality and diversified capabilities of organic aviation support at division level. But, unfortunately, command and control techniques and doctrine Army-wide had not kept pace with these technological advances and experiences gained in Korea.

The summer of 1953 found most divisions still organized under 1952 TOE's with small air sections included in many separate units, as shown in Figure 4. Five divisions being tested by Eighth Army in Korea had organized provisional aviation companies and were proceeding with their evaluation of this type of organization (see Figure 5). In both cases, the division aviation officer was a special staff officer who coordinated all aspects of organic aviation operation

at divisional level. But in provisional aviation companies he also became company commander.

The three types of aircraft authorized in divisions had all been recently issued. Although much experience had been gained during the fighting, it was realized that the full potential of these new machines was not being exploited. Although more aircraft were assigned than ever before, commanders still felt that further increases, especially in the number of helicopters, would be a definite asset.¹ At the same time, it was recognized that as the number and types of aircraft increased, supply and maintenance requirements became a greater burden for commanders possessing air sections. The details of coping with these problems had not been worked out by the time the truce was signed.

Prior to 1950, the aviation personnel situation in a division presented relatively few problems. By 1953, however, seven branches were authorized aviation, and branch aviators were further classified according to their flying qualifications, as fixed-wing, rotary-wing, or dual rated, and also instrument or non-instrument rated.² Enlisted mechanics were trained in either fixed or rotary wing aircraft maintenance skills. Because aviation personnel requirements varied throughout the division, assignment of properly trained officers and men to each of the eleven air sections was quite a task. The Army

¹The Johns Hopkins University, Operation Research Office, A Survey of Helicopter Operations, Maintenance, and Supply in Korea (Chevy Chase, Maryland: The Johns Hopkins University, ORO, June 1954), pp. 24-35.

²U. S. Army Aviation School, Roles of Army Aviation, MLP 500-1 (Fort Rucker, Alabama: The Army Aviation School, 1964), p. 11-13.

Aviation School came into existence in July of 1953 as a means of improving and consolidating training, but the Air Force continued to participate in the training of Army Aviation personnel until 1957.³ In addition to the problems just mentioned, after the war more aviators were assigned to branch material ground duties within the division, in line with new Department of the Army policies. These officers were required to maintain flying proficiency while serving in ground assignments. Even though the program was extremely valuable in training officers and in keeping the aviation program oriented to the needs of ground combat troops, this procedure did create a slight drain on aviation resources.⁴ Since the military services were not reduced as drastically after the Korean War as they had been following World War II, there was an ample supply of personnel for active divisions. Proper training and assignment of these men were essential to the division and required constant attention.

At the same time that excellent results were being reported in the testing of provisional aviation companies in Korea, Army Field Forces conducted a study to determine the most suitable organization for Army Aviation within divisions, corps, and armies as a part of a general review of the Army Aviation program. Apparently unimpressed by the Korean experiments, the study concluded that the decentralized assignment concept was sound and:

³ Richard K. Tierney, The Army Aviation Story, Fred Montgomery ed. (Northport, Alabama: Colonial Press, 1963), p. 90.

⁴ U.S., Department of the Army, Career Management for Army Officers, TM 20-605, Change 8 (Washington: U.S. Government Printing Office, 19 April 1956), p. 1.

a. Army aviation in all arms and services except Transportation Corps and Medical Service, should be organic to using unit. Centralization of logistical support and operational facilities should be accomplished to effect the optimum efficiency and use of personnel and equipment without sacrificing the operational control and immediate availability of Army aircraft to using unit commanders.

d. Army aviation officers should be included as a part of the G-3 section at division, corps, and army level to:

- (1) Provide supervision over Army Aviation activities.
- (2) Provide a source of information concerning Army Aviation for the commander and other staff sections.⁵

In arriving at these conclusions, the study considered the organization of Army Aviation at that time weakened by:

- (1) Lack of operational facilities (navigation, communications, crash rescue, field lighting).
- (2) Lack of administrative support (mess).
- (3) Lack of provision for adequate maintenance supervision.
- (4) Lack of operational supervision to prevent duplication of missions and insure best utilizations.⁶

It also stated that: "Since using units are organic to the division, establishment of a TOE aviation company is a workable solution for divisional Army aviation, . . ." But it was felt that the loss of responsiveness to using unit commanders was too high a price to pay for an aviation company which would overcome some of the weaknesses.⁷

To provide better aviation training and improved control and unity of effort, the Army Field Forces study also recommended that the Army assume full responsibility for training of aviation personnel.⁸

⁵U.S. Army Field Forces, Review of Army Aviation Program (Classified data) (U) (Fort Monroe, Virginia: Office of Army Field Forces, 20 November 1953). Incl. 2 to Incl. 2 p. 3 (Classified as secret in part, Incl. 2 unclassified).

⁶Ibid., Incl. 2 to Incl. 2 p. 2.

⁷Ibid., Incl. 2 to Incl. 2 p. 2.

⁸Ibid., Incl. 2 p. 3.

As it turned out, recommendations made in the Army Field Forces study were adopted to a great extent. The organization of divisional aviation was not changed after the war (leaving the aircraft with the using units), increased emphasis was placed on the aviator staff officers duties at division level, and the Army assumed responsibility for all of its aviation training in 1957.^{9, 10}

Recognizing the weaknesses identified in the study and the necessity for conducting further evaluation and analysis, the Army included an aviation company in two major division level tests between 1954 and 1957. These two tests will be discussed in some detail since they represent the most significant developments in the evolution of doctrine for command and control of divisional aviation during this period.

ATFA Division Organization and Concepts.

Starting in 1954, the Army organized, trained, and tested certain selected divisions under the "Atomic Test Field Army" (ATFA) concept. This concept was designed to test divisions under conditions of active nuclear warfare, taking advantage of the latest developments in doctrine and equipment. Aviation organization, equipment, and operational concepts were identical for infantry, armored, and airborne divisions.¹¹

⁹Letter, Office, Chief of Army Field Forces to the Commandants of all Army service schools, 25 March 1954, Subj.: "Organization for Army Aviation Within Divisions, Corps, and Army" (File No. N17949.3, Fort Leavenworth, Kansas Library), p. 1.

¹⁰Tierney, p. 89.

¹¹U. S. Army Field Forces, Infantry Division, ATFA, TCE 7 ATFA (Fort Monroe, Virginia: Office, Chief of Army Field Forces, 1954), p. 1.

A combat aviation company consisting of 51 officers, 1 warrant officer, and 88 enlisted men was assigned to the division headquarters battalion of each test division. This company was equipped with 14 observation airplanes (L-19's), 4 utility airplanes (L-20's), 14 reconnaissance helicopters (H-13's), and 7 utility helicopters (H-19's). (The H-19 was a new aircraft to the division). Company organization and assignment within the division are shown in Figure 6. The division aviation officer, a lieutenant colonel, and his assistant, a major, were members of the aviation company but were normally located with division headquarters. The captain who commanded the company was usually found at the division main airfield.¹²

The normal chain of command ran from the division commander through the division headquarters battalion commander to the aviation company commander. The headquarters battalion commander exercised command (less operational control) over the aviation company. Operational control over the company was delegated to the division aviation officer in the name of the division commander.¹³

Because of peculiarities in the maintenance and supply systems associated with army aircraft, the headquarters battalion did not support the aviation company in these areas. Transportation Army Aircraft Maintenance (TAAM) companies at field army worked directly with

¹²U.S. Army Field Forces, Combat Aviation Company, Infantry Division, ATFA, TOE 1-7 ATFA (Fort Monroe, Virginia: Office, Chief of Army Field Forces, 30 September 1954), p. 1.

¹³U.S. Army Field Forces, The Infantry Division, TT 7-100-1 (Fort Monroe, Virginia: Office, Chief of Army Field Forces, 26 October, 1954), pp. 16, 23.

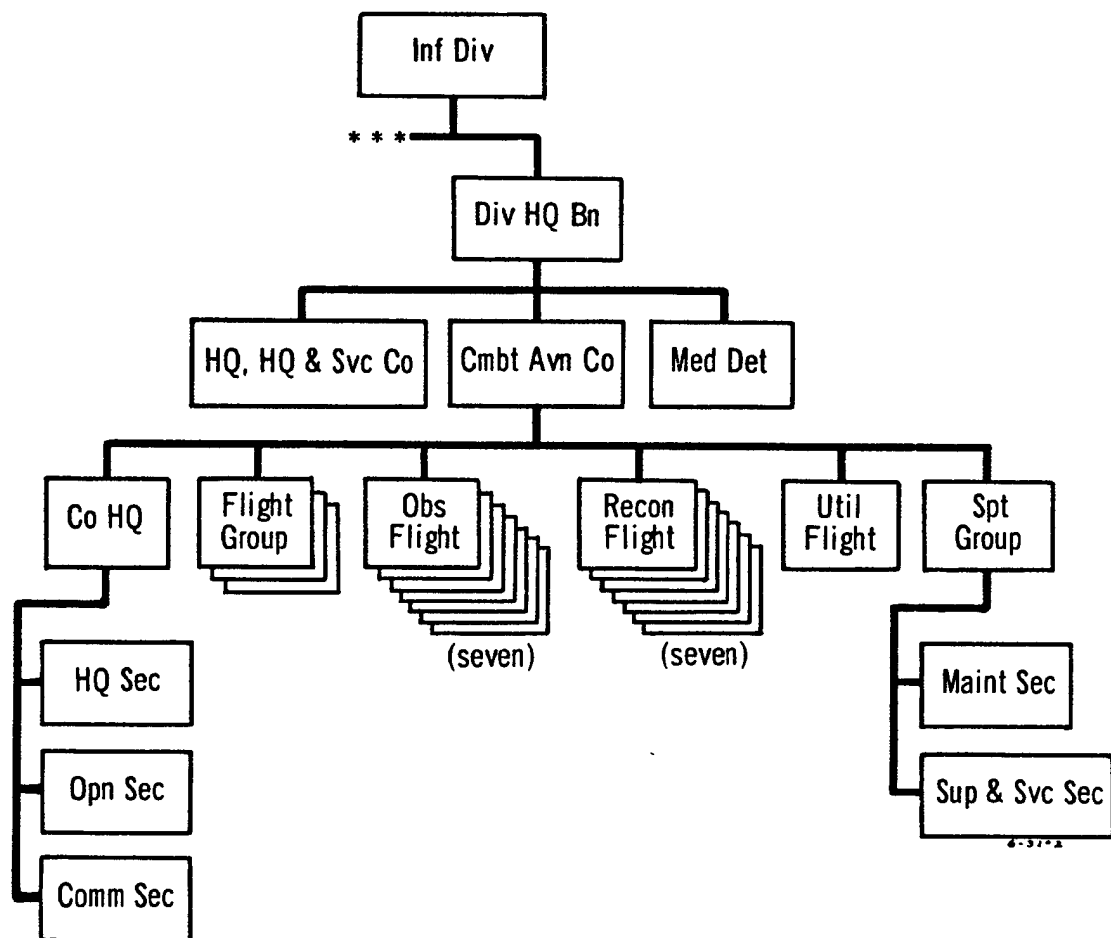


Figure 6.—ATFA infantry division aviation organization, 1954-1955.

the aviation company to provide the necessary third echelon support. The headquarters and service company of division headquarters battalion did provide second echelon personnel service, mess, and non-aviation supply and maintenance support, which minimized the logistical and administrative burden in the company.¹⁴

The Aviation Company was organized so that it could operate in one or more combat elements, thus permitting support of the division and its subordinate units from one or more locations. The organization was designed to provide maximum flexibility and permit rapid transition from one disposition to another as the tactical situation changed.¹⁵

Support was provided to elements of the division by either of two methods: (1) a flight group under the command of a captain, flight group commander, was attached to or placed in support of a specific unit in much the same fashion as RCT's received support in Korea. This flight group was tailored to the needs of the unit involved and could contain any number and type of aircraft to include attached or supporting non-divisional aviation such as medical service or transportation units. Flight groups were formed at the same time the division was organized for combat and could be reorganized as the tactical situation changed; (2) all aircraft not placed into one of the flight groups were utilized on either preplanned or on-call missions

¹⁴

Ibid., p. 16-19.

¹⁵

U.S. Army Field Forces, Army Aviation Combat Operations, TT 1-100-1 (Fort Monroe, Virginia: Office, Chief of Army Field Forces, 30 September 1954), p. 103.

in general support of the entire division. The aviation officer established mission priorities based on guidance received from the division commander and received and processed requests from subordinate units. The aviation company commander assigned missions received from the aviation officer to flight leaders within his company for execution. Units submitted requests for aviation support of this type through the division aviation officer at any time the need arose.¹⁶

In the training and testing of ATFA divisions and their aviation companies a great deal of attention was focused on command and control techniques. Experience gained in Korea was valuable in identifying the more troublesome areas, and training texts published for use by the test units provided guidance in many areas which had been previously neglected.

Training text 1-100-1, Army Aviation Combat Operations, contained the following statement concerning command and staff responsibilities and functions:

The availability of organic or attached Army aviation units gives the tactical commander a formidable combat support weapon to be included in his operational planning. Maximum utilization of these combat aircraft can be accomplished only when the tactical commander has familiarized himself with the mission, capabilities, and techniques of employment of Army aircraft, and his established definite command and operational control policies concerning the tactical employment of Army aviation within his unit. The availability of an aviation staff officer gives the tactical commander an experienced advisor in a technical military field.¹⁷

¹⁶ Headquarters, 3d Infantry Division, 3d Infantry Division Standing Operating Procedure (Fort Benning, Georgia: 3d Infantry Division, 29 October 1955), Annex C, p. 6.

¹⁷ TT 1-100-1, p. 9.

The requirement to be familiar with organic aviation operation was new to most tactical commanders, because, until the Korean War, organic aviation capabilities were somewhat limited and commanders usually did not become directly involved in the day-to-day operation of air sections.

Techniques and procedures developed for ATFA divisions directly tied general and special staff officers into the planning and execution of air missions relevant to their area of interest. As examples: Intelligence Officers were held responsible for overall coordination and staff supervision of Army aerial photography, and division surgeons were required to publish SOP's establishing policies, priorities, and other information pertinent to aeromedical evacuation.¹⁸

To provide a method of coordinating and expediting the safe and orderly flow of Army air traffic under all flight conditions, to provide in-flight assistance to Army aircraft, and to facilitate air defense operations, training text 1-100-1 described the first Army air traffic control system. In setting down the control measures to be used and the organization and operation of the system, the text clearly stated: "Air traffic control is a command responsibility", and "The Army aviation officer at each level is directly responsible for the establishment and operation of the air traffic control system".¹⁹ The division aviation officer had to coordinate closely his control system with the corps aviation officer to ensure uniformity throughout the

¹⁸Ibid., pp. 28, 51.

¹⁹Ibid., p. 65.

theater of operation. Without going into the details of the system, its operation was as follows: During daylight hours division air traffic was usually controlled by the division aviation officer, taking advantage of published SOP's, comprehensive preflight briefings, and continuous radio contact with airborne aircraft. Identification was not considered a serious problem during daylight hours. During instrument flight conditions, at night, and at other times when a traffic conflict might be encountered, the division aviation officer was required to forward a flight plan to the corps flight operation center on each aircraft operating in the division zone. This flight plan was then used in regulating and coordinating the flow of air traffic and in identifying friendly aircraft to air defense units.²⁰ Although this was a long way from a foolproof system, it was the first serious effort the army had made in this direction.

In June of 1955, the ATFA division headquarters battalion was eliminated and the aviation company became a separate company of the division headquarters troops (see Figure 7). As a result of initial tests, the company was reorganized slightly. A fourth flight group was added, providing a specific flight group to meet the habitual needs of division artillery, and the company was provided with its own mess and administration.²¹ Since the division headquarters battalion had never exercised operational control over the aviation company

²⁰ Ibid., p. 70.

²¹ U.S. Army Continental Army Command, The Infantry Division, TT 7-100-1, Change 1 (Fort Monroe, Virginia: Headquarters, U. S. Continental Army Command, 15 June 1955), pp. 3, 26.

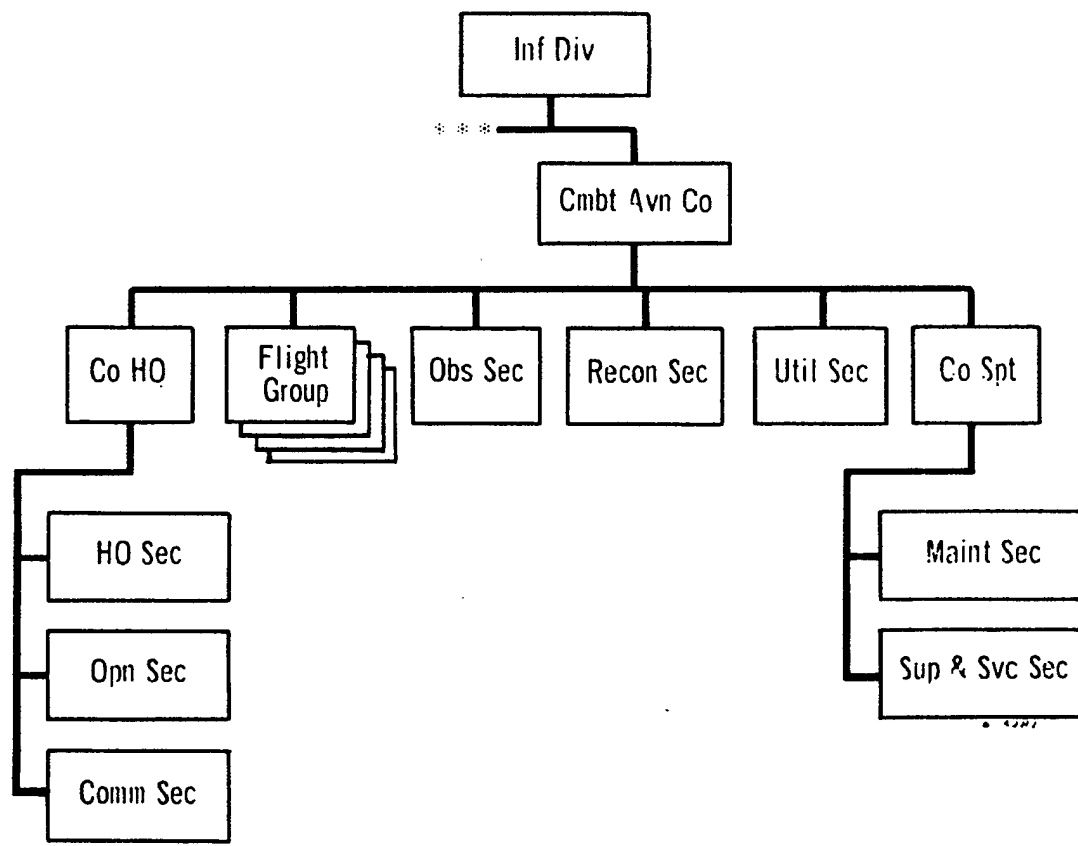


Figure 7. 11th Air Force organizational organization, 1955-1960.

and the addition of the one flight group did not constitute a change to operational techniques, the changes made in 1955 did not alter the basic command and control concepts to any great extent.

The final reports of tests conducted with ATFA divisions in 1956 are still classified as secret and therefore cannot be discussed in this study. The Army did not adopt the ATFA concept, but many features were carried over to the pentomic divisions.

Pentomic Division Organization and Concepts.

In December of 1956, the Army started to reorganize its divisions with major emphasis on: ". . . the problems of ground atomic war with due consideration to the evaluated experience of history and field tests."²² Pentomic divisions were known as ROCID (Infantry), ROCAD (Armored), or ROTAD (Airborne) divisions. The plan was to reorganize certain divisions under the new pentomic concept and, through training, testing, and evaluation, make adjustments in doctrine, organization, and equipment. These changes would, it was hoped, eventually result in a sound concept which could be used to reorganize all Army divisions.

By March of 1957, the Army, eager to proceed with the overall modernization of its divisions considered the reorganized division to be ". . . an adequate and effective combat organization for employment in warfare of the future."²³ It was recognized, however, that areas

²² U.S. Army Continental Army Command, The Infantry Division, TT 7-100-2 (Fort Monroe, Virginia: Headquarters, U.S. Continental Army Command, 1 March 1957), p. 1.

²³ Letter, Headquarters, U.S. Continental Army Command to CG's Fifth U.S. Army and U.S. Army Pacific, 12 March 1957, Subject: "Evaluation of New Infantry Division" (File No. N 17935.22-A, Fort Leavenworth, Kansas Library).

might have existed in which improvements could have been effected. No formal troop tests of the concept were planned to identify these. Instead, an evaluation program was set up whereby commanders in the field recommended " . . . changes in organization, equipment and doctrine found desirable through experiences of the reorganized divisions in the field."²⁴

Unlike the ATFA concept, the organization of aviation was slightly different in each type of pentomic division. Major differences were the inclusion of a flight operation section in the airborne division, the addition of a tactical transport platoon containing utility and light transport helicopters to the armored and airborne divisions, and the assignment of the airborne division aviation company to the command and control battalion as opposed to the division trains in the infantry and armored divisions.^{25,26,27} Although the organizations were different, the basic command and control doctrine was very similar for the three types of divisions. For this reason only the infantry division will be discussed in detail in this study.

²⁴Ibid.

²⁵U.S. Army Continental Army Command, Combat Aviation Company, Infantry Division, TOE 1-7T ROCID (Fort Monroe, Virginia: Headquarters, Continental Army Command, 20 December 1956), p. 2.

²⁶U.S. Army Continental Army Command, Combat Aviation Company, Armored Division, TOE 1-17T ROCAD (Fort Monroe, Virginia: Headquarters, Continental Army Command, 20 December 1956), p. 2.

²⁷U.S. Army Continental Army Command, Combat Aviation Company, Airborne Division, TOE 1-57D ROTAD (Fort Monroe, Virginia: Headquarters, Continental Army Command, 20 December 1956), p. 2.

In the pentomic infantry division (TOE 7T ROCID), a combat aviation company containing 69 officers, 1 warrant officer, and 153 enlisted men was assigned to the division trains. Better equipped than any previous aviation company, the ROCID aviation company had 16 observation airplanes (L-19's), 6 utility airplanes (L-20's), 20 reconnaissance helicopters (H-13's), and 8 utility helicopters (H-19's). The company also had its own mess, supply, and administration. Organization of this company and its assignment within the division are shown in Figure 8. As with the ATFA organization, the division aviation section of the company contained a special staff section which normally worked in the division headquarters. The section contained three officers: the division aviation officer (a lieutenant colonel), assistant division aviation officer (a major), and the company operations officer (a major). With three officers in the section and the necessary enlisted assistance, it was possible to run a continuous 24 hour-a-day aviation section in the tactical operation center of the division. The assistant operations officer (a captain) ran the company operations section located at the main airfield.²⁸

The normal chain of command ran from the division commander through the division trains commander to the aviation company commander. The use of a trains headquarters to provide tactical control of service units was new in the infantry division and the amount of influence this intermediate headquarters had on the aviation company was quite limited.

²⁸ TOE 1-7 T ROCID, p. 7.

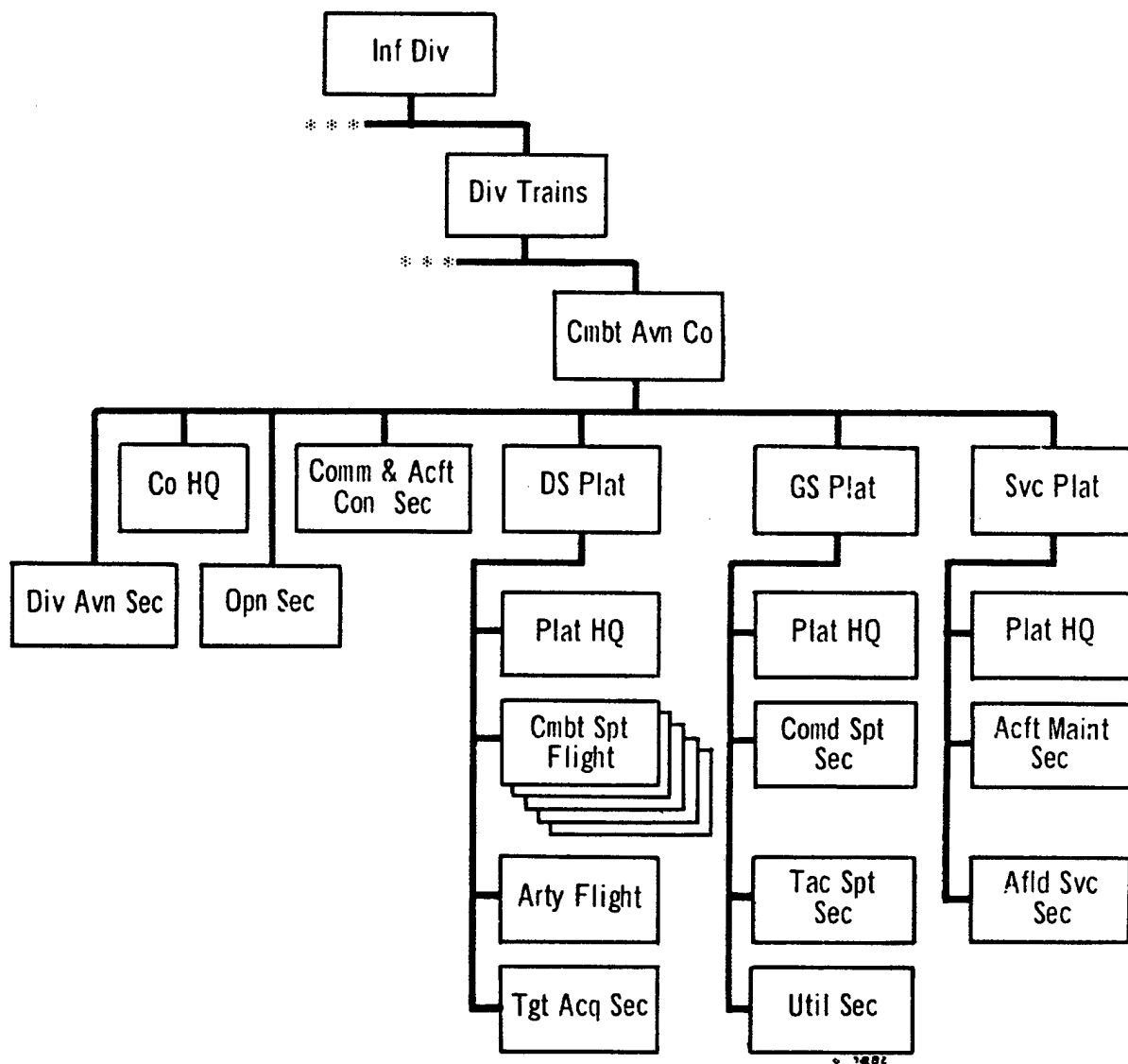


Figure 8. -ROCAD aviation organization, 1956- 1959.

Training Text 7-100-2 described the position of the trains commander as follows:

The division trains commander is a tactical commander. He is responsible to the division commander for all tactical activities of division trains. The division trains commander facilitates accomplishment of technical operations by close coordination with service unit commanders and staff officers but he is not responsible for the administrative and technical operations of the service units, nor the control of aviation operations and specialized aviation training.²⁹

The aviation company was included in division trains primarily because the main portion of the company normally operated from a base airfield in the trains area, and the trains headquarters provided a means of tactical control for movement and rear area security, supervision of administrative and logistical support, and an intermediate headquarters to coordinate non-specialized training, maintenance, and administration.

Aircraft maintenance and supply support was provided by a Transportation Army Aircraft Maintenance (TAAM) company as it had been since 1952, but the amount of support required had more than doubled since that time.³⁰

The primary purpose for organizing aviation into companies is to provide more efficient maintenance, supply, and administration. The aviation company operates in decentralized support of the division and its battle groups. Centralized control in employing aircraft of the division aviation company will seldom be necessary or advisable. The aircraft must remain immediately available to ground commanders. Some duplication of aviation effort within the division is preferable to possible delays which might occur under a plan of centralized control of the aircraft.³¹

²⁹ TT 7-100-2, p. 75.

³⁰ U.S., Department of the Army, Transportation Army Aircraft Maintenance Company, TOE 57-457 (Washington: U.S. Government Printing Office, 25 July 1953), p. 2.

³¹ TT 1-100-1, November 1957, p. 10.

This statement appearing in Training Text 1-100-1, Army Aviation Combat Operations, is an explicit statement of the pentomic aviation concept. To obtain a clear picture of what this statement meant, recall that, with the exception of a few divisions used in the ATFA tests, the organization of aviation within divisions was substantially as shown in Figure 4, at the time that pentomic aviation companies were introduced. The consensus in divisions was that decentralized control of aviation (control by the using unit) was the most desirable method.^{32,33} Aviation personnel in general disagreed with this, primarily on the basis of maintenance, supply, and administrative difficulties encountered. During the ATFA tests and in the provisional aviation companies organized in Korea, operational control of all organic aviation had been exercised by the division aviation officer. A clue to the partial failure of this system is found in the 1955 change to the ATFA training text which contained the following statement: "The division aviation company has been reorganized to provide a specific flight group to meet the habitual needs of division artillery. Pilots and observers contained in this flight will normally be artillerymen."³⁴ When new doctrine was published for the pentomic divisions, operational control of all

³² Headquarters, 8th. Infantry Division, SOP for Field Operations (APO 111, U.S. Forces: Headquarters, 8th Infantry Division, 10 May 1957), p. O-1.

³³ Headquarters, 9th. Infantry Division, Field SOP for 9th Infantry Division Units (Fort Carson, Colorado: Headquarters, 9th Infantry Division, 1 April 1957), p. 132.

³⁴ TT 7-100-1, Change 1, p. 26.

divisional aviation was not given to the aviation officer, and every effort was made to make it clear that the basic concept for control was decentralized even though the aircraft were assigned to an aviation company.

Pentomic combat aviation companies were normally employed in two echelons. The forward echelon consisted of the direct support platoon augmented by elements from the other platoons. The same flight or section was habitually attached or placed under operational control of each of the regiments -- regiments were later changed to battle groups -- division artillery, and the armored cavalry squadron. This was done to insure a close working relationship between aviation units and the units they supported. Every effort was made to provide pilots from the appropriate branch. The rear echelon contained the remainder of the company. It reinforced the forward echelon and provided support for the remainder of the division. The forward echelon usually operated from tactical landing areas (fixed wing flight strips and/or helicopter landing pads) close to the unit they were supporting, while the bulk of the rear echelon was located at the division base airfield.³⁵

When operational plans were prepared, the aviation officer was responsible for recommending the task organization of the aviation company and preparing the aviation annex to the plan. Being in close contact with the division commander and staff, he was aware of the requirements for aviation support. As an aviator and a member of the aviation company he knew the capabilities and limitations of the

³⁵
TT 7-100-2, p. 19.

division's aviation equipment and the status of the aviation company.³⁶ Combat support flights, the artillery flight, and the target acquisition section were the nuclei to which the necessary augmentations were attached from the remainder of the company in order to satisfy tactical requirements. Once the aviation annex to the tactical plan was approved and became a part of the operations order, it was sent to the aviation company commander for implementation. The company was then responsible for providing logistical and administrative support, less mess and non-aviation expendable supplies, to the flights attached to or under the operational control of tactical units.³⁷ The aviation company commander was also required to maintain the strength and equipment of these flights at the required level out of resources available to him in the company. The composition of support flights and sections could be altered at any time to meet supported unit requirements.

Elements of the division not provided with a combat support flight or section obtained support from the aviation companies rear echelon. Procedures to obtain aviation support differed from division to division. In the 4th Armored Division major commands were authorized to submit requests directly to the aviation company.³⁸ Eleventh Airborne Division units requested support from the division aviation

³⁶

TT 1-100-1, Nov. 1957, p. 20-23.

³⁷

Headquarters, 10th Infantry Division, Standard Operating Procedure, 10th Infantry Division (USAREUR: Headquarters, 10th Infantry Division, 1957), p. 77.

³⁸

Headquarters, 4th Armored Division, Field Standing Operating Procedure (APO 326, U.S. Forces: Headquarters 4th Armored Division, 7 July 1959), p. E1.

officer, and the G-3 assigned priorities in the event of a conflict.

The 10th Infantry Division aviation officer processed all requests in that division except that helicopter-borne operations were coordinated by the G-3 and aerial resupply requirements by the G-4.⁴⁰

Perhaps the most elaborate request system was used in the 82d Airborne Division where the aviation company operations section, G-2, G-3, G-4, and division surgeon were all given authority to approve requests for certain types of missions.⁴¹

As the reorganization and field evaluation of divisions continued, no major changes were made in the command arrangements of divisional aviation, but many aspects of control were affected. A discussion of the most important of these cannot be arranged chronologically since the process of change occurred simultaneously. Neither can they be considered in order of importance as it is difficult to determine the full impact of each development in light of its overall effect on the division. These aspects of control are presented here to explain the general trends in development of the control system in the pentomic division between 1956 and 1959.

It is apparent from reviewing the organization and equipment of

³⁹Headquarters, 11th Airborne Division, Standing Operating Procedures for Field Operations (APO 112, U.S. Forces: Headquarters, 11th Airborne Division 1 October 1957), p. P-1.

⁴⁰Standard Operating Procedure, 10th Infantry Division, p. 76.

⁴¹Headquarters, 82d Airborne Division, 82d Airborne Division Standing Operating Procedure (Field) (Fort Bragg, North Carolina: Headquarters, 82d Airborne Division, 1 May 1959), p. K-1.

the aviation company that a greatly increased organic air capability was available to the pentomic division. TT 7-100-2 listed the following capabilities for the combat aviation company:

(1) Providing aircraft for day and night aerial observation, reconnaissance and surveillance. Within capabilities of the aircraft, observation missions are flown in the division zone of action for the purpose of acquiring, locating, verifying, and reporting targets, adjusting artillery and tank fires, and studying terrain.

(2) Moving troops, patrols, supplies, and equipment within the combat zone by air.

(3) Transporting commanders and staff on reconnaissance or liaison missions, as well as liaison officers, couriers and messengers.

(4) Performing supplemental aerial photography, wire laying, radio relay, aeromedical evacuation, battle area illumination, propaganda leaflet dissemination, and radiological survey.⁴²

Because of the magnitude of the division's organic aviation operation, it became physically impossible for one section, the division aviation section, to coordinate efficiently the total air effort in a fast-moving tactical situation. The solution to this problem was usually sought through one or more of the following control techniques:

1. Publication of a comprehensive aviation annex to the division SOP.

2. Inclusion of a detailed aviation annex in division operations orders.

3. Delegation of control of aviation resources for certain specific types of missions to general and special staff officers.

4. Establishment of priorities.⁴³

These techniques required extensive staff coordination, and the aviation

⁴²TT 7-100-2, p. 18.

⁴³TT 1-100-1, November 1957, pp. 122-128 and p. 23.

section was the focal point for working out the details of organic aviation support in the division. For this reason, most divisions included the aviation section in their tactical operation center.⁴⁴

Complications were encountered when more than one of these techniques were employed simultaneously. It then became possible for the company to receive valid missions from multiple sources, and priorities were difficult to establish. This situation sometimes strained relations between the division aviation officer (the policy maker) and the company commander, but the use of these techniques was solidly in line with the decentralized control concept.

Air traffic control became increasingly complex during the pentomic evaluation period. The environment in which division aircraft would have to survive in the event of a general war was becoming more sophisticated, the numbers of aircraft involved were increasing, and 24-hour all-weather operation of the aviation company was recognized as a necessity in future conflicts. The situation was changing so rapidly that no firm doctrine could be developed. The Army did publish interim guidance on Army air traffic control in September 1957, but it was little more than an expansion of its original system which took advantage of improved communications and navigational radio equipment.⁴⁵ Tests of the system in 1958 showed that: "The Army Aviation Air Traffic Control System as presently organized is only adequate to control the safe and orderly flow of

⁴⁴ TT 7-100-2, p. 52.

⁴⁵ U.S. Army Continental Army Command, Army Aviation Air Traffic Operations 1-100-2 (Fort Monroe, Virginia: Headquarters, Continental Army Command, September 1957), p. 1.

Army air traffic for a limited time, due largely to inadequacies in personnel and equipment."⁴⁶ When the aviation company was reorganized again in 1959, additional personnel and equipment were provided as a means of overcoming some of the deficiencies in the system.

Pentomic aviation companies were perhaps some of the most complicated units of company size the Army had ever devised (see Figure 8). With each piece of new equipment, new mission capability acquired, and increase in size and strength, they became more unwieldy. Commanding and controlling a company like this under normal circumstances would have been difficult, but, under the conditions prevalent in the late 1950's, aviation company commanders were faced with a real challenge.⁴⁷

Not the least of the problems confronting divisions was the maintenance on the 50 aircraft assigned. TAAM companies were not providing satisfactory support. In the spring of 1959, a test was conducted with the 1st Infantry Division to determine the feasibility of assigning an aircraft maintenance detachment to the division to perform third echelon aircraft maintenance. The test was a complete success and in 1959 a detachment was added to each division.⁴⁸ This was the first aircraft maintenance capability above second echelon

⁴⁶ U.S. Army Continental Army Command, Final Report of Troop Test, Army Aviation Air Traffic Operations (AAATO), Exercise Cumberland Hills (Fort Monroe, Virginia: Headquarters Continental Army Command, 26 January 1959), p. 1.

⁴⁷ U.S. Army Aviation School, Division Aviation Organization Study, Annex B (Fort Rucker, Alabama: Combat Developments Office, U.S. Army Aviation School, 1957), p. 4.

⁴⁸ U.S., Department of the Army, Aircraft Maintenance Detachment, Infantry Division, Transportation Battalion, TOE 55-79D (Draft) (Washington: U.S. Government Printing Office, (Undated)), p. 3.

made organic to divisions.

Changes occurred outside the division during the evaluation period also. As mentioned previously, the Army took over all aviation training in 1957. Roles and missions being assigned to Army Aviation at that time and new developments in hardware and tactics pointed out a need for a staff officer course for Army aviators. The Army Aviation School started the first class of an eight-week program of instruction in this field on 23 October 1957.⁴⁹ In addition to the staff officer course, students at the Aviation School and other service schools were given increased instruction on the employment of Army Aviation. These programs made the entire Army more air-conscious and contributed immeasurably to the development of improved control systems in divisions.

During the latter stages of the pentomic division reorganization and evaluation, many of the training texts were revised and published in the form of field manuals. Doctrine contained in these manuals was not radically different from the original texts, and no major changes were made in command or control doctrine. Manuals prepared by most of the branch schools contained references to Army Aviation and the ways in which aviation support could be obtained and applied.^{50,51}

⁴⁹ U.S. Army Aviation Center, Army Aviation Center History, 1954-1964 (Fort Rucker, Alabama: Headquarters U.S. Army Aviation Center, 1 January 1965), p. 15.

⁵⁰ U.S., Department of the Army, Field Artillery Tactics and Techniques, FM 6-20 (Washington: U.S. Government Printing Office, May 1958), pp. 20, 64, 65.

⁵¹ U.S., Department of the Army, Division Artillery, Infantry Division, FM 6-21 (Washington: U.S. Government Printing Office, August 1957), pp. 15, 23, 29, 36.

A good deal of this emphasis on aviation was the result of the Aviation School's increased efforts in developing doctrine and publishing training literature.⁵²

Reorganization and evaluation of ROCID divisions were concluded in early 1959. The aviation company had proved to be a viable unit and there was a growing confidence in and reliance on organic aviation at divisional level. Doctrine for command and control of the division's organic aviation, although beset by minor difficulties and in a constant state of development, was generally considered sound.

⁵²U.S., Department of the Army, U.S. Army Aviation School, AR 350-121 (Washington: U.S. Government Printing Office, 25 Mar. 1959).

CHAPTER V

DIVISIONAL AVIATION 1959-1961

In this paper, the period between 1959 and 1961 is distinguished from the testing and reorganization period which preceded it because, in 1959, the pentomic concept was formally adopted by the Army. This development should not be interpreted to mean that the Army was completely satisfied with the pentomic division and the manner in which aviation was commanded and controlled under this concept. On the contrary, during this interim period, the Army undertook a serious study of its divisions which resulted in a major reorganization in 1961. While these studies were being conducted, some changes were made to the pentomic division, but the basic method of operation and doctrine for command and control of aviation organic to the division were not significantly modified.

Organization and Equipment.

New TOE's were published in 1959 and all divisions were reorganized according to the new TOE's at the earliest practicable date after receiving approval from the Department of the Army.¹

Under new TOE's there were slight differences between aviation companies of the infantry, armored, and airborne divisions as there

¹ U.S., Department of the Army, Infantry Division, TOE 7D (Draft) (Washington: U.S. Government Printing Office, (Undated)), p.1.

had been during the evaluation period. Again, because of the similarity in organization and doctrine, only the infantry division will be discussed in detail.

The major changes in organization of the infantry division under TOE-1-7D (Draft) were: (1) the removal of the aviation company from division trains and its assignment as a separate company directly under division headquarters; (2) the addition of a 3d echelon aircraft maintenance capability to the division; (3) the addition of an aerial surveillance platoon to replace the target acquisition section; (4) the addition of a section of light cargo helicopters to the general support platoon; and (5) the expansion of the operations section into an operations platoon providing a greatly improved air traffic control capability.² (See Figure 9).

The new aviation company had a personnel strength of 75 officers, 1 warrant officer, and 182 enlisted men, and, although the total aircraft strength was decreased by 1 to 49, new types of aircraft were authorized and the quantities of the older types adjusted. Aircraft authorized by number and type were: 14 observation airplanes (L-19's), 5 utility airplanes (L-20's), 3 medium observation airplanes (OV-1's), 17 reconnaissance helicopters (H-13's), 4 utility helicopters (H-19's), 6 light cargo helicopters (H-21's or H-34's), and 12 unmanned combat surveillance drones (MQM 57A's).³ Medium observation airplanes (OV-1's), a relatively high performance twin engine surveillance aircraft, and light cargo helicopters (H-21's or

² U.S., Department of the Army, Infantry Division Aviation Co., TOE 1-7D (Draft) (Washington: U.S. Government Printing Office, (Undated)), p. 2.

³ Ibid., p. 15.

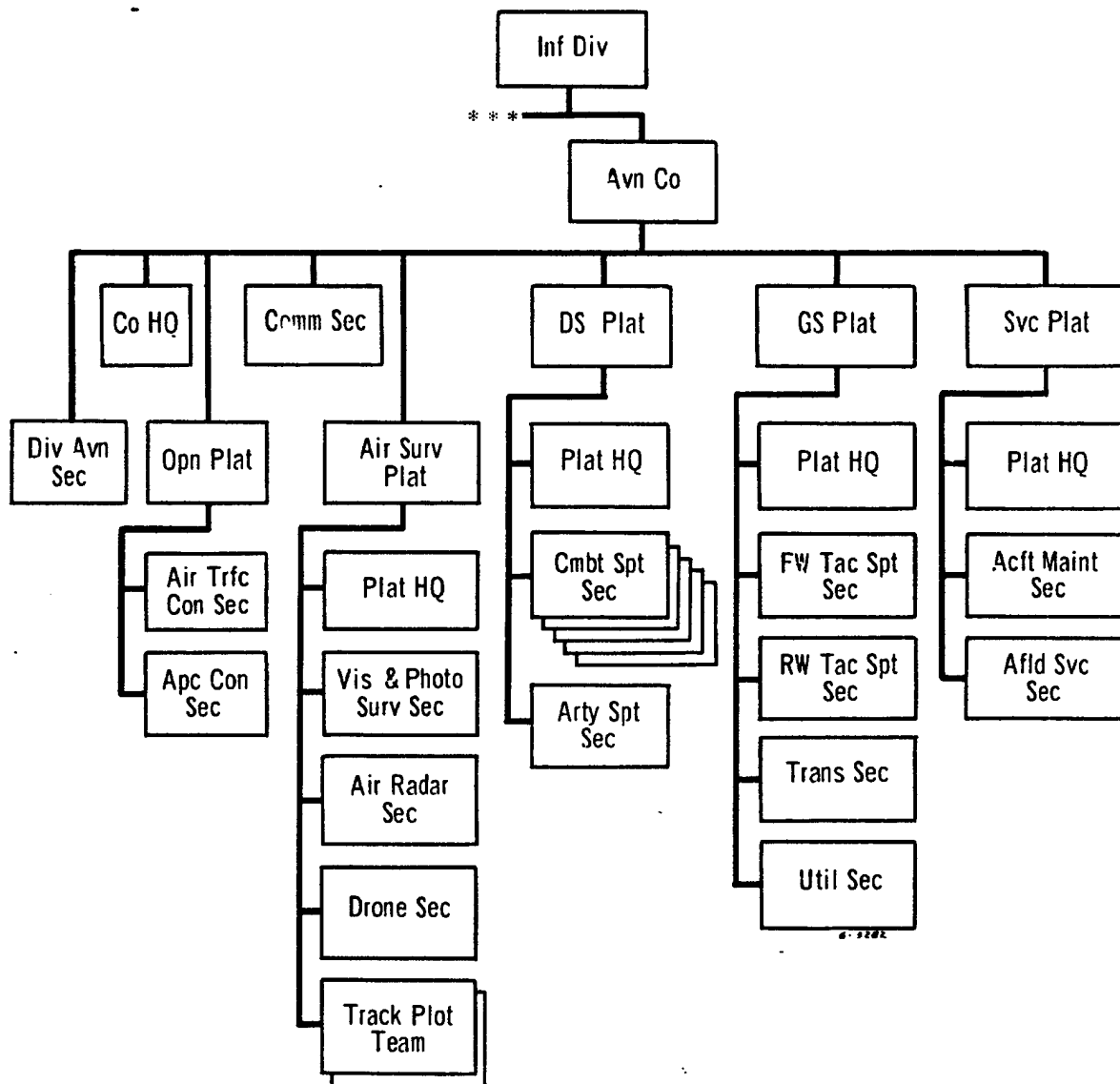


Figure 9. Infantry Division organization, 1959-1961.

H-34's) were new to infantry divisions and were not available in sufficient quantity in 1959 to equip all active divisions. Some low priority divisions such as the 1st Infantry Division never did receive their OV-1's for the aviation company. Consequently, these divisions were unable to fully develop techniques and procedures for field operation under the 1959 TOE's before the division was reorganized again.⁴

Operation.

Reasons for removing the aviation company from division trains were similar to the reasons for taking the ATFA test aviation company out of the division headquarters battalion during the conduction of the ATFA tests. Division trains had not had operational control of the company and had provided even less supervision and control over the company than the ATFA division headquarters battalion had. As a separate company, the aviation company became quite self-sufficient and the chain of command was simplified.

When the aircraft maintenance detachment was added to the division, it became a part of the division transportation battalion. The detachment normally lived with the aviation company but operated under the command and technical control of the transportation battalion commander. The aviation company provided the detachment with mess facilities and billets while the detachment performed third echelon

⁴These statements are based on the authors personal experiences as 1st Infantry Division aircraft maintenance officer from June 1959 to September 1960, and in other assignments in the 1st Division until May 1962.

maintenance on aviation company aircraft.⁵ There were two views on the assignment of this detachment. Some commanders agreed that it was best assigned to the transportation battalion because a higher standard of aircraft maintenance could be maintained when the detachment was not overly influenced by the aviation company commander in the accomplishment of its maintenance tasks. Other commanders, especially aviation company commanders, felt they could make sure that the maintenance effort was organized to support operational requirements if the detachment were placed under the command or operational control of the aviation company commander. Some experiments were conducted with the detachment under the operational control of the aviation company, but the detachment was never officially removed from the transportation battalion.⁶

In spite of a number of changes in the equipment and organization of the aviation company, there were not many adjustments required in the system used for controlling the aviation activities of the division. The company was still employed in two echelons, forward and rear, and the mission request system remained basically the same as that described in Chapter IV. But with greater mission capabilities staff coordination became even more important and control more difficult.

⁵U.S., Department of the Army, Aircraft Maintenance Detachment, Infantry Division Transportation Battalion, TOE 55-79D (Draft) (Washington: U.S. Government Printing Office, (Undated)), p. 4.

⁶These statements are based on the authors personal experiences as 1st Division Aircraft Maintenance Officer.

Employment of the aerial surveillance platoon was similar to the method used with the target acquisition section, under the operational control of the cavalry squadron commander.⁷ As an information-collecting agency with a greatly improved capability over that of the target acquisition section, the G-2 was considerably more interested in the activities of this platoon, and, in some cases, he was given operational control of the platoon or elements thereof. He normally prepared the air surveillance plan by which missions were assigned to the platoon either through the aviation company or the cavalry squadron.^{8,9}

New electronic equipment authorized in the operations platoon improved the all-weather capabilities of the company and provided a more positive means for controlling air traffic.¹⁰ The basic control system was not substantially improved and continued to be only partially effective.

Summary.

The TOE for the infantry division aviation company listed the following capabilities:

- (1) Continuous (day and night) operations during visual weather conditions and limited operations under instrument weather conditions.

⁷ U.S. Army Command and General Staff College, Report of Combined Arms and Services Conference, 18-22 May 1959, Agenda Item Nr.16 (Fort Leavenworth, Kan.: U.S. Army Command and General Staff College 15 July 1959), p. 210.

⁸ Ibid., p. 214.

⁹ Headquarters, 4th Armored Division, Field Standing Operating Procedure (APO 326, U.S. Forces: Headquarters, 4th Armored Division, 7 July 1959), p. E1.

¹⁰ TOE 1-7D (Draft), p. 14.

(2) Aerial observation, reconnaissance and surveillance (both day and night) of enemy areas for the purpose of locating, verifying, and evaluating targets, terrain study and adjusting artillery and mortar fire.

(3) Rapid spot aerial photography consisting of daylight vertical and oblique photography and night vertical photography from piloted and drone aircraft.

(4) Radar surveillance.

(5) Radiological survey.

(6) Battlefield illumination.

(8) Command, liaison, reconnaissance and transportation.

(9) Aerial wire laying, radio relay, and propaganda leaflet dissemination.

(10) Continuous limited aeromedical evacuation from the immediate battlefield.¹¹

This is certainly an impressive list of tasks which, when properly performed, contributed immeasurably to the accomplishment of the division combat mission. The efficient operation of the company, as in any organization, depended to a great extent on effective command and control. After years of testing and reorganizing, there were still some aspects of organic divisional aviation which created difficulty in command and control. A brief appraisal of divisional aviation reveals the most serious areas of difficulty as follows:

1. Size and complexity of the aviation company.¹²

2. Relationship between the division aviation officer and aviation company commander.¹³

¹¹ Ibid., p. 3.

¹² U.S. Army Aviation School, Division Aviation Organization Study, Annex B (Fort Rucker, Alabama: Combat Developments Office, U.S. Army Aviation School, 1957), p. 4.

¹³ Letter, Commandant U.S. Army Armor School to the Commandant U.S. Army Command and General Staff College, 24 January 1961, Subject: "Command and Staff Relationship, Division Aviation Commander" (File No. M17949.21, Fort Leavenworth, Kansas Library).

3. Doctrine for the control of air traffic.¹⁴
4. Control of the third echelon aircraft maintenance detachment.¹⁵
5. Complex system of providing support to habitual users of aviation resources.¹⁶

Aviation equipment authorized in pentomic divisions was far superior to anything that had been dreamed of ten years before, and new developments were becoming available faster than they could be field-tested.

By 1961 the Army school system was providing well-trained personnel for division aviation companies, and Department of the Army policies pertaining to ground assignments for aviators were effective in orienting the aviation program closely to the needs of ground tactical commanders.^{17,18,19}

¹⁴U.S., Department of the Army, Army Aviation, FMI-100 (Washington: U.S. Government Printing Office, 3 April 1959), p. 142.

¹⁵U.S. Army Command and General Staff College, Study on Procedures and Techniques concerning Control and Coordination of Army Aviation Elements and Aviation Maintenance and Supply Elements (Fort Leavenworth, Kan.: U.S. Army Command and General Staff College, April 1960), p. 6.

¹⁶Report of Combined Arms and Services Conference, p. 214-215.

¹⁷Richard K. Tierney, The Army Aviation Story, Fred Montgomery ed. (Northport, Alabama: Colonial Press, 1963), p. 79-112.

¹⁸U.S., Department of the Army, Career Planning for Army Officers, PAM 600-3 (Washington: U.S. Government Printing Office, 8 November 1961), p. 68.

¹⁹Letter, Department of the Army to all Army Aviators, 1961, Subject: "Career Branch Qualifications for Aviators" (File No. N17949.24, Fort Leavenworth, Kansas Library).

Long before pentomic divisions had been fully equipped, the Army began preparations for a major reorganization under the completely new "Reorganization Objective Army Division" (ROAD) concept.²⁰ Consequently, during 1960 and 1961, major emphasis was placed on preparing doctrine for the employment of ROAD divisions, and little was done to further develop or refine techniques for command and control of pentomic division aviation.

Although there was no occasion to employ divisions in combat while divisional aviation was organized as an aviation company, there is no doubt that the support provided would have been excellent despite the difficulties mentioned above.

²⁰ U.S. Army Command and General Staff College, Reorganization and Modernization of Army Divisions, Information letter distributed in the college (Fort Leavenworth, Kansas: U.S. Army Command and General Staff College, 29 May 1961), p. 1.

CHAPTER VI.

LOOKING BACK

Organic divisional aviation was authorized and employed in combat during World War II before effective command and control doctrine had been formulated or tested. As a result, the initial experiences with this new capability were rather disappointing. Starting with the small Piper Cub-equipped air OP sections of 1942, many changes were necessary during the next 19 years in the methods used to command and control the division's expanding aviation resources.

Looking back over the changes which occurred, it is apparent that the evolution of doctrine was accelerated during World War II and the Korean conflict and retarded during other periods. During World War II, the primary motivating forces were the almost complete lack of established doctrine and experience and the need to develop techniques suitable for the different environments encountered in the various theaters of operation. In the Korean War, although the environment had a significant effect on organic aviation, the greatest impetus for change was the introduction of new equipment which greatly expanded the division's aviation capabilities.

After each war, the Army increased the division's aviation resources. Following World War II, little was done to develop new

doctrine, and the tried and true techniques used during the war were formalized and applied to the new air sections of the division. In the years after the truce in Korea, the Army did test new doctrine while increasing the division's aviation resources. The testing and reorganization conducted during the late 1950's capitalized on momentum generated by the Korean War, and much more significant progress was made in developing command and control doctrine in this period than had been the case in the late 1940's. By 1959 the drive for new doctrine and radical changes had slowed and the Army again formalized in tables of organization and equipment and field manuals much of its command and control doctrine. For the next two years very little change occurred in basic doctrine for units in the field while the Army prepared to make sweeping changes to the entire division and its organic aviation.

In developing command doctrine and determining the assignment of aviation within divisions during the period covered by this paper, the Army had to continuously keep in mind two important considerations. The first of these considerations was the advisability of assigning aviation elements to non-aviation units, thus placing aviation under commanders who were not technically qualified to evaluate performance and usually not directly involved in day-to-day air operations. The second consideration was proper training of aviation enlisted personnel, aviators, commanders, and staff officers.

During the early stages of the World War II, it became necessary to increase the amount of control exercised by the artillery air officer over the activities of artillery air OP sections to compensate for lack

of knowledge and understanding on the part of the commanders. Later, during the Korean War, commanders were more familiar with organic air operations, but the introduction of new aircraft and the increase in logistic support requirements further complicated the command of aviation sections by non-rated commanders. In the years following the Korean War a solution to command problems was attempted by placing all aviation within the division in one company under the command of an aviator. Elements of the company were then attached to or placed under the operational control of ground tactical commanders during combat operations. This system relieved the ground commander of administrative and logistical burdens while still giving him full authority over the operation of his aviation support.

To provide the type of organic aviation support vital to the division, it was imperative that all aviation personnel, especially aviation commanders and staff officers, be well oriented to the needs of the ground tactical commander and thoroughly familiar with his methods of operation. Original plans in 1942 called for only 20% of all aviation personnel to be fully qualified, branch-trained Army Ground Forces officers, to provide supervision. The remainder were to be Army Air Forces staff sergeants who would be transferred to the Army Ground Forces on completion of training. This plan was not successful and by the end of World War II virtually all pilots were Army Ground Forces Officers. Throughout the years, Army career management policies have required commissioned aviators to maintain proficiency in their basic branch concurrently with their flying duties. These policies have been instrumental in developing a

closely integrated organic air-ground team at division level. The Army Aviation School was effective in formulating aviation command and control doctrine, publishing this doctrine in field manuals and school texts, and in training aviation commanders and staff officers for assignment in divisions.

By far the greatest controversy involving organic division aviation had to do with the manner in which it was controlled. The pros and cons of centralized versus decentralized control have been discussed in considerable detail in this paper. A few of the more important factors which were considered in deciding whether centralized or decentralized control should be used were: responsiveness to the needs of ground commanders, logistical and administrative support of aviation elements, training requirements for aviation personnel, size and complexity of aviation organization, tactical situation, physical environment, availability of aircraft and aviation personnel, operational efficiency, air traffic control, and nature of the operation. During the 19 years covered in this paper, the emphasis on these factors shifted continuously. Generally speaking, when control was centralized, overall operating efficiency was increased but responsiveness to ground tactical commanders decreased. On the other hand, decentralized control made the aircraft more available to ground commanders but maximum efficiency in employment of aviation resources was hard to obtain and control and logistical support were more difficult. The tactical situations and physical environments encountered in World War II and The Korean War usually favored centralized control. The question was never actually resolved.

By 1961 a combination of centralized command and decentralized control was being used in the pentomic divisions.

Firm doctrine on the control of Army air traffic over the division zone was never published. During World War II, visual identification was all that was necessary and radio contact with airborne aircraft provided an adequate means of controlling traffic. Even though it was recognized that air traffic control was becoming a greater problem in the years before the Korean War, nothing positive was done to improve the system. In the Korean War, U. S. forces enjoyed air superiority and virtually all organic air activity was carried on during daylight hours under visual flight conditions. Consequently, control of air traffic did not present a major problem even though the numbers of aircraft involved were greatly increased. In testing new division concepts and reorganizing along pentomic lines, the Army made a definite attempt to develop an air traffic control system for use on the nuclear battlefield. The communication and navigation capability of divisional aviation was substantially improved; however, tests of the system indicated that it was only partially effective. By 1961 problems in air traffic control were emerging faster than solutions to these problems could be worked out in the field.

It is difficult to draw conclusions concerning the overall doctrine for command and control of organic division aviation as it was developed between 1942 and 1961. What can be said is that doctrine evolved very rapidly and was influenced most by combat experiences in World War II and Korea. There was certainly no permanent system

devised during this period, but by 1961 the Army had many more definite ideas about its divisional aviation than it had in 1942. The experience gained over the years should be useful in developing doctrine for the employment of even greater organic aviation capabilities at division level in the future.

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